AMAZING STORIES

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SEEDS OF LIFE by JOHN TAINE

Joe Skidmore

Miles J. Breuer, M.D.

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Our Cover

This issue represents a scene from the story entitled, "The Demons of Rhadi-Mu," by Miles J. Breuer, M.D., in which Professor Geiger and his party, known to the savages as the "white gods," are shown trying to escape by passing through a radium field, in a specially constructed vehicle.

Cover Illustration by MOREY

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Seeds of

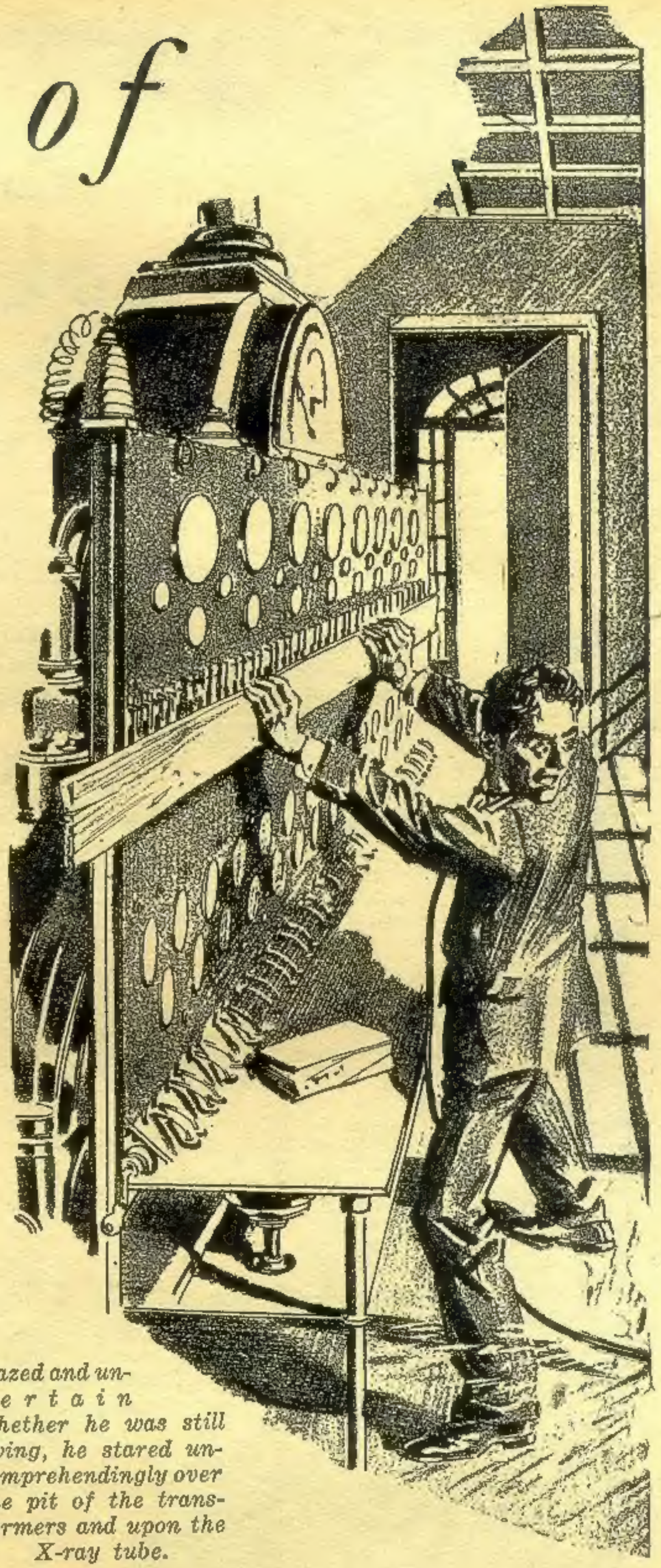
By

John Taine

Illustrations by WESSO

THIS latest scientifiction masterpiece from the pen of John Taine is so impressive in its conception that it would be exceedingly difficult for any preliminary assurance or editorial introduction to do justice to it. The author, who is one of the very few younger members of the National Academy of Science, tells us that he has had opportunities for first-hand information on the subject dealing with the effects on living materials of radiations of the shorter wave lengths—a great deal of which has not yet been published in scientific journals. The second main scientific theme of this story—the control of evolution—is no wild dream either; such control is already in a minor degree actually accomplished—specifically in the induced artificial mutations under the influence of X-rays or electrons by H. J. Muller and his collaborators. And certainly the description of the life among research scientists in such an institution as the Erickson Foundation of this tale is not just a product of the imagination. It is realistic and gripping. Mr. Taine is the author of numerous highly successful pseudo-scientific novels.

This is easily one of his best.



Dazed and uncertain whether he was still living, he stared uncomprehendingly over the pit of the transformers and upon the X-ray tube.

CHAPTER I

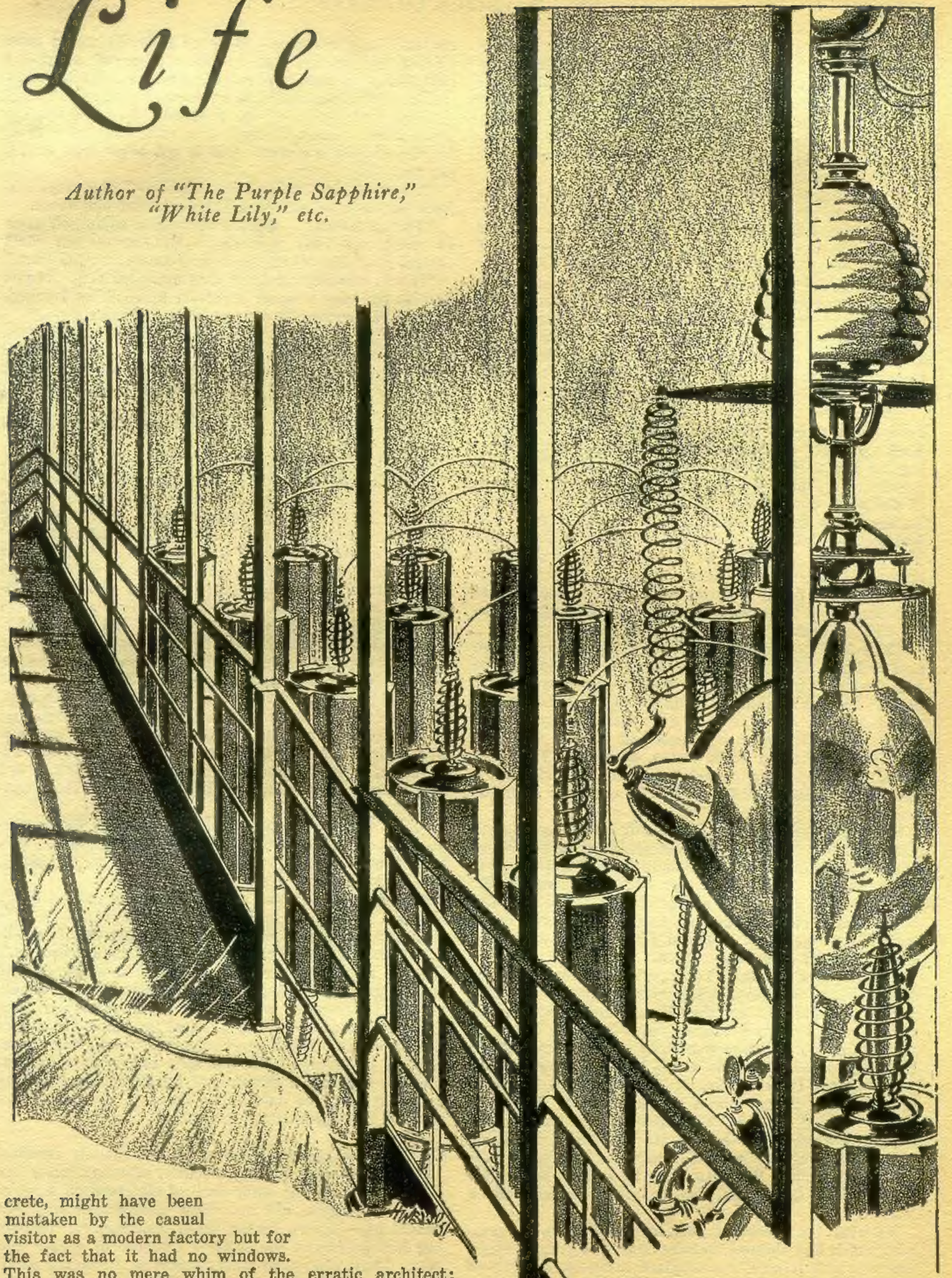
The Black Widow

"DANGER. Keep Out." This curt warning in scarlet on the bright green steel door of the twenty million volt electric laboratory was intended for the curious public, not for the intrepid researchers, should one of the latter carelessly forget to lock the door after him.

The laboratory itself, a severe box of reinforced con-

Life

Author of "The Purple Sapphire," "White Lily," etc.



crete, might have been mistaken by the casual visitor as a modern factory but for the fact that it had no windows. This was no mere whim of the erratic architect; certain experiments must be carried out by their own light or in the dim glow of carefully filtered illu-

mination from artificial sources. The absence of windows gave the massive rectangular block a singularly forbidding aspect. An imaginative artist might have said the laboratory had a sinister appearance, and only a scientist would have contradicted him. To the daring workers who tamed the man-made lightnings in it, the twenty million volt laboratory was more austerely beautiful than the Parthenon in its prime.

Of the thousands who passed the laboratory daily on their way to or from work in the city of Seattle, perhaps a scant half dozen gave it so much as a passing glance. It was just another building, as barren of romance as a shoe factory. The charm of the Erickson Foundation for Electrical Research was not visible to a casual inspection. Nevertheless, its fascination was a vivid fact to the eighty men who slaved in its laboratories twelve or eighteen hours a day, regardless of all time clocks or other devices to coerce the unwilling to earn their wages. Their one trial was the fussy Director of the Foundation; work was a delight.

About three o'clock of a brilliant May afternoon, Andrew Crane and his technical assistant, the stocky Neils Bork, gingerly approached the forbidding door, carrying the last unit of Crane's latest invention. This was a massive cylinder of Jena glass, six feet long by three in diameter, open at one end and sealed at the other by an enormous metal cathode like a giant's helmet. It had cost the pair four months of unremitting labor and heartbreaking setbacks to perfect this evil-looking crown to Crane's masterpiece. Therefore, they proceeded cautiously, firmly planting both feet on one granite step leading to the green door before venturing to fumble for the next.

Their final tussle in the workshops of the Foundation had endured nineteen hours. The job of sealing the cathode to the glass had to be done at one spurt, or not at all. During all that grueling grind neither man had dared to turn aside from the blowpipe for a second. In the nervous tension of succeeding at last, they had not felt the lack of food, water, or sleep. They had failed too often already, each time with the prize but a few hours ahead of them, to lose it again for a cup of water.

Crane planted his right foot firmly on the last, broad step. His left followed. He was up, his arms trembling from exhaustion. Bork cautiously felt for the top step. Then abused nature took her sardonic revenge for nineteen hours' flouting of her rights. The groping foot failed to clear the granite angle by a quarter of an inch. In a fraction of a second, four months' agonizing labor was as if it had never been.

Crane was a tall, lean Texan, of about twenty-seven, desiccated, with a long, cadaverous face and a constant dry grin about his mouth. He shunned unnecessary speech, except when a tube or valve suddenly burnt itself out owing to some oversight of his own. When Bork blundered, Crane as a rule held his tongue. But he grinned. Bork wished at such awkward moments that the lank Texan would at least swear. He never did; he merely smiled. Neils Bork was a true Nordic type, blue-eyed, yellow-haired, stockily built. From his physical appearance he should have been a steady, self-reliant technician. Unfortunately he was not as reliable as he might have been, had he given himself half a chance.

Viewing the shattered glass and the elaborate cathode, which had skipped merrily down the granite steps, and was now lying like a capsized turtle on its cracked back thirty feet away in the middle of the cement sidewalk, Crane grinned. Bork tried not to look at his companion's face. He failed miserably.

"I couldn't help it," he blurted out.

It was a foolish thing to have said. Of course he couldn't 'help it'—now. Only an imbecile would have deliberately smashed an intricate piece of apparatus that had taken months of sweating toil to perfect. Bork's indiscretion loosened Crane's reluctant tongue.

"You could help it," he snapped, "if you'd let the booze alone. Look at me! I'm as steady as a rock. You're shaking all over. Cut it out after this, or I'll cut you out."

"I haven't touched a drop for——" the wretched Bork began in self-defense, but Crane cut him short.

"Twenty hours! I smelt your breath when you came to work yesterday morning. Of course you can't control your legs when you're half-stewed all the time."

"It was working all night that made me trip. If you had let me take a layoff after we finished, as I asked, instead of carrying it over at once, I wouldn't——"

"All right. Keep your shirt on. Sorry I rode you. Well," Crane continued with a sour grin, "we shall have to do it again. That's all. I'm going to take a look around before I go to bed. Let's see if the baby can still kick."

Bork stood wretchedly silent while Crane unlocked the steel door.

"Coming?" Crane called, as he switched on the lights.

Bork followed, locked the door, and stood sullenly beside his chief on the narrow steel gallery overlooking the vast pit of the huge transformers. Forty of these towering giants, gray and evil as the smokestacks of an old time battleship, loomed up menacingly in the glaring light. Each stood firmly planted on its towering tripod —three twenty-foot rigid legs made up of huge mushroom insulators, like a living but immobile enemy from another planet. The whole battery of the forty devils presented a strangely half human aspect, and their massed company conveyed a sinister threat, as of seething whirlwinds of energy stored up against the men who had rashly created these hostile fiends. The two men, staring down on their half-tamed genii, felt something of this menace, although both were practical and one was daring almost to a fault. But in their present exhaustion, nature succeeded in making herself felt, if not heard, on a deeper, more intuitive level of their consciousness.

"Let's try out the two million volt baby," Crane proposed as a peace offering to the still surly Bork. "We haven't busted that, yet," he continued rather tactlessly, and Bork shot him a spiteful glance.

The 'two million volt' to which Crane referred was his first attempt to build a more powerful X-ray tube than any then in existence. By studying this two million volt baby minutely, Crane hoped to succeed with the full grown twenty million volt tube which he and Bork were constructing. Then, if theory for once should prove a trustworthy guide to the riddle of matter, they hoped to smash up the atoms of at least half a dozen of the elements. What might happen thereafter Crane refused to predict. He had seen too many ingenious theories exploded suddenly and finally by some unforeseen 'accident,' to have much faith in prophecies not founded on experimental evidence.

THAT no physicist had as yet completely smashed an atom from husk to nucleus, although many had knocked at least the outer shell of electrons off some of the less durable, did not deter mathematicians, who should have known better, from broadcasting depressing forecasts as to the probable outcome of drastic success. These gloomy prophets united in predicting an instantaneous outgush of energy, like a transcendent bolt of lightning multiplied upon itself a trillionfold, that would sweep the sun and all its planets, the unfortunate earth included, into everlasting annihilation. But, as the experimentalists pointed out, this might be merely

another nightmare of the innocent theorists, which a single contrary fact—not a rival theory—would disprove forever. At all events it was worth a trial. Should theory prove right, the rash experimenter, puffed out like a feeble candle flame, would never live to hear the inevitable 'I told you so'; should the doleful prophets again be in error, the man in the laboratory would probably witness events of surpassing interest never before imagined by the human mind. Crane was resolved to try. Like the legendary Prometheus he would bring light to the world or perish.

"Step it up two hundred and fifty thousand at a time," he ordered Bork, "and be careful. We don't want to blow out the tube."

Again Bork shot him a resentful glance as if his bruised conscience accused him of being a hopeless bungler. Nothing was farther from Crane's mind. He was merely repeating the routine instructions of the laboratory. To prevent possibly fatal mishaps, the experimenters invariably followed a rigid set of rules in their work, testing every switch and piece of apparatus in a definite order before touching anything, although they 'knew' that everything was safe.

Bork threw in the first switch and turned off the lights, plunging the laboratory into total darkness. There was a metallic clang, and the black air began to vibrate ominously with a rapid, surging hiss. A sombre eye of cherry red stole out on the darkness as two hundred and fifty thousand volts flashed to the cathode of the X-ray tube; then, almost instantly, the red flashed up to a dazzling white spot.

"All right," Crane ordered, "throw in the next."

Under half a million volts the twelve foot tube flickered and burned with a fitful green fluorescence, revealing the eight metal 'doughnuts,' like huge balloon tires, encircling the glass. These constituted the practical detail which balanced the terrific forces within the tube and prevented the glass from collapsing.

The outcome of any particular 'run' was always somewhat of a sporting venture. Until the shot was safely over, it was stupid to bet that the tube would not collapse or burn out. Crane waited a full two minutes before ordering the step up to seven hundred and fifty thousand volts. Under the increased pressure the surging dry hiss leapt up, shriller and angrier, and deep violet coronas of electricity bristled out, crackling evilly, in unexpected spots of the darkness.

Bork began to grow restless.

"Hadn't we better step it up to a million now, and quit?"

Crane laughed his dry laugh. "Getting nervous about what Dr. Brown told us?"

Bork grunted, and Crane, in his cocksure ignorance, elucidated. "All doctors are old women. What do the physiologists actually know about the effect of X-rays as hard as ours on human tissues? I've spent at least thirty hours the past eight months working around that tube going at capacity—two million volts—and there isn't a blister or a burn anywhere on my body. I'll bet these rays are so hard they go straight through flesh, bone and marrow like sunlight through a soap bubble. What are you afraid of? If our bodies are so transparent to these hard rays that they stop none of the vibrations, I fail to see how the biggest cells in us are in any danger whatever. You've got to stop hard radiations, or at least damp them down, before they can do human bone, nerves or muscles any harm. All the early workers used soft rays. That's why they lost their eyesight, fingers, hands, arms, legs, and finally their lives."

"It takes months, or even years, for the bad burns to show up," Bork objected.

"Well," Crane retorted, "if there is anything in what Dr. Brown said, I should be a pretty ugly leper right now. Use your eyes. My skin's as smooth as a baby's."

"He said you will be sterilized for life," Bork muttered. "The same for me. I'm not going to live the next twenty years like a rotten half-man."

"Be a confirmed bachelor like me," Crane laughed, "and you'll never miss the difference. What's a family anyway but a lot of grief? Throw in the next switch and forget the girl."

Under the million volts, the glowing tube buzzed like a swarm of enraged hornets, and for the first time in all his months of work in the laboratory, Crane felt a peculiar dry itching over the whole body. As Bork stepped the voltage up to the full two million, the itching increased to the limit of endurance.

"Imagination," he muttered, refusing to heed nature's plain hint. "Hand me the fluoroscope, will you?"

Bork groped over the bench beneath the switches and failed, in the dark, to find what he sought.

"I'll have to turn on the lights."

"Very well. Make it snappy. I need my lunch and a nap. So do you."

Rather than admit that Bork's fears might not be wholly old-womanish, Crane would stick out his discomfort and delude his assistant into a false feeling of security by feigning an interest in the hardness of the rays.

Bork turned on the floodlights. Just as he was about to pick up the fluoroscope, he started back with an involuntary exclamation of disgust. His arm shot to his side as if jolted by a sharp shock.

"Short circuit?" Crane snapped. "Here, I'll pull the switches."

In two seconds the coronas were extinct, a succession of metallic clanks shot rapidly to silence, and the cathode of the two million volt tube dimmed to a luminous blood red. The tingling itch, however, on every inch of Crane's skin persisted. Bork for the moment was apparently beyond speech. In the glaring light his face had a greenish hue, as if he were about to be violently seasick.

"Short circuit?" Crane repeated.

"No," Bork gasped. "Black widow."

Crane failed to conceal his contempt. "Afraid of a spider? Why didn't you smash it?"

Bork swallowed hard before replying.

"It dropped off the bench and fell behind those boards."

"Rot! You're seeing things. It'll be snakes next. There have been no black widows found nearer than Magnolia Bluffs or Bainbridge Island—ten miles from here."

Crane's indifferent sarcasm stung Bork to cold fury. His nerves were undoubtedly on edge after nineteen hours' exasperating work and months of more or less steady, 'moderate' soaking. He succeeded in keeping his voice level.

"Snakes? Then lift that board."

Without a word, Crane bent down and contemptuously tossed the top board aside. "There's nothing here," he remarked dryly, turning the next board. In his zeal to discomfit Bork he deliberately thrust his hand into the narrow space between the pile of boards and the wall, sweeping it methodically back and forth to dislodge the supposedly imaginary enemy. The sweat started out on Bork's forehead. Death by the bite of an aggressively venomous spider is likely to be unpleasant even to witness.

"Look out!" Bork yelled, as a jet black ball, the size of a tiny mouse, rolled from behind the pile, instantly took energetic legs to itself, and scurried with incredible speed straight up the concrete wall directly before

Crane's face. Crane's action was instinctive. He straightened instantly to his full height, gave a convulsive leap and, with his clenched fist, smashed the loathsome thing just as it was about to scud beyond his reach. It fell, a mashed blob of evil black body and twitching legs, plop into the eyepiece of the fluoroscope.

"You win this time," Crane grinned, turning the black mess over on its back. "She's a black widow. Here's her trademark—the red hour glass on her underside. We had better post a warning to the fellows to go easy in the dark. This is the ideal breeding place for the brutes—dry and warm, with plenty of old packing cases lying about. I'll have to ask Mr. Kent to get this cluttered rats' nest cleaned up for once. Well, shall we finish our shot?"

"What for?" Bork demanded.

"Just to prove that we haven't lost our nerve. Here, I'll remove the evidence from the fluoroscope before you douse the lights. Better save the remains for the Director," he continued, carefully depositing the smashed spider in an empty cigar box, "or he'll say we've both been hitting the bottle. Ready? Shoot; I've got the fluoroscope."

As the lights went off, Crane caught the dull flash of anger on Bork's face. "I had better stop prodding him," he thought, "or he may stick a knife into me. He's a grouch; no sense of humor."

CRANE was partly right. Bork, a poorly educated mechanic with a natural gift for delicate work, cherished a sour grudge against the world in general and against the eighty trained scientists of the Erickson Foundation in particular. They, he imagined, had profited by the undue advantages of their social position, and had somehow—in what particular way he could not define—swindled him out of the education he merited. He had been denied the fair opportunity, which a democracy is alleged to offer all comers, of making something of himself. Such was his aggrieved creed.

As a matter of fact a good third of all the scientists on the staff had earned their half starved way through high school, college and university with no greater resources at their command than Bork possessed when he was at the student age. That they preferred drudgery for a spell to boozy goodfellowship for the term of their apprenticeship accounted for the present difference between their status and his. One of these men, a great specialist in X-ray crystal analysis, had paid his way while a student by stoking coal eight hours at night in the municipal gas plant. Bork, in all his flaming youth, had done nothing more strenuous than act as half time assistant, four hours a day, to a pattern maker.

Bork had brains; there was no denying so obvious a fact. But he was short on backbone. Being Crane's technical assistant, he naturally, if only half consciously, stored up all his spite against life for Crane's special amusement. Crane was the one man in the Foundation who could have tolerated the grouchy Bork for more than a week. The rest would have discharged him without compunction. Crane's wry sense of humor gave him a more human angle on the dour churl. Although he would have cut his tongue out, rather than acknowledge the fact, even to himself, Crane hoped to save Bork from his sourer fraction and make a man of him. This missionary drive lay behind his frequent digs at Bork's tippling. Crane sensed the man's innate ability. That all this high grade brain power should fritter itself away on peevish discontent and sodden conviviality seemed to him an outrage against nature.

The exasperations of this particular day, culminating in the wreck of the new cathode and the incident of the black widow, crystallized Bork's sullen irritation toward Crane into a definite, hard hatred. The uninitiated often marvel at the trivial grounds cited by the injured party in a divorce suit, overlooking the ten or fifteen years of constant fault-finding and mutual dislike concealed beneath the last, insignificant straw.

So it proved in Bork's case. Crane's superior contempt for his assistant's perfectly natural abhorrence of a venomous spider revealed the full measure of the stronger man's subconscious scorn for a weakling. Bork was no fool. He realized that although Crane had always looked down on him as a somewhat spineless parody of a full grown man, he himself had looked up to Crane, not with respect or affection, but with smouldering hatred and the unacknowledged desire to humble the better man to his own pygmy stature. And in that sudden flash of revelation, struck out on the darkness of his thwarted nature by a tactless jest, Bork saw himself as the appointed destroyer of his would-be friend and natural enemy. His bitter sense of inferiority was swallowed up in a yet more bitter certainty that his was the power to injure Crane in a way that would hurt. As he switched off the floodlights, and silently threw in the full two million volts in eight perfectly timed steps of two hundred and fifty thousand each, he resolved to get blind drunk the moment he was free of Crane's supervision. He would not dull the edge of his projected spree by foolishly indulging in lunch or supper. No; he would hurl himself and all his forces raging and ravenously empty on the crudest bootleg Scotch whiskey he could buy. What should happen thereafter would be up to Crane alone. In any event Bork would win, in his perverse way, even if it cost him a term in the penitentiary.

"How's that for penetration?" Crane demanded enthusiastically, holding his hand before the fluoroscope in the path of the rays. They were standing about a hundred feet away from the tube. Not a shadow of flesh or bone showed on the fluoroscope. To those hard rays, the human body was as transparent as rock crystal to sunlight. Bork gave a grudging consent that it was pretty good. To test the penetration further, Crane next tried to cast a shadow of the heavy iron rail, against which he was leaning, on the fluorescent screen. Again the penetrating radiation passed clear through the obstacle as if it were air.

"And you're afraid," Crane exulted, "that rays which will pass like these through iron can affect the insignificant cells of your body. They wouldn't bother to stop for such stuff." Nevertheless it cost Crane all of his self control to keep from tearing at his own tingling, itching skin.

"Well, let's call it a day, and go home," he said.

On emerging from the laboratory they found a knot of curious idlers gathered about the cracked cathode, vainly trying to puzzle out whose the huge 'helmet' might be.

"We had better rescue that," Crane remarked, "before some loafer finds out that it's valuable. We can't afford to lose several hundred dollars' worth of platinum on top of our other hard luck."

Crane's thoughtless allusion to their mishap was the last straw. With a smothered oath, Bork turned his back on the small crowd and strode off toward the street.

"See you tomorrow at eight," Crane called after him.

Bork made no reply. Grinning broadly, Crane picked up the cathode and started with it back to the workshops. The idlers, having thoughtfully selected choice souvenirs of broken glass, dispersed. Had Crane been as keen a student of human nature as he was of the physics of radiation, he would have followed Bork and let the crowd keep the costly cathode as a memento of a memorable blunder.

CHAPTER II

The Boiling Box

INSTEAD of hastily swallowing a meal and hurrying home to bed as he had intended earlier in the afternoon, Crane sped as fast as his long legs would take him to see his physician.

Dr. Brown, the specialist in radiology, who had already warned Crane of the possible consequences of exposing himself recklessly to the hard X-rays, lived within a quarter of a mile of the Erickson Foundation. Being a family physician to about half the staff of the Foundation, he understood their needs better than might the average doctor. More than once he had been called out of bed in the small hours of the morning to resuscitate some careless worker who had neglected the precautions of common sense and been jolted into insensibility, or to pick splinters of glass from hands and faces damaged in the pursuit of science. Brown himself specialized in medical radiology, and was expert on everything that an up-to-date physician should know about the action of cosmic rays, X-rays, and ultra violet light on the human body. As a hobby he kept abreast of biology in its less practical phases, particularly in a study of the protozoa.

Crane found the doctor in. Without preliminaries of any kind, he plunged into the middle of things.

"My whole skin burns and itches like the very devil."

"You've been working with your two million volt tube again? Without any protection, as usual?"

Crane nodded, extending his bare forearm for Brown to examine. The doctor studied the skin minutely through a powerful pocket lens and shook his head.

"If there's anything wrong, a microscopical examination of the skin may show it up. Everything looks perfectly normal through this. Sure it's not just your imagination running away with what I said the other day?"

For answer Crane, unable longer to control himself, began tearing with his nails at every accessible inch of skin on his body. Brown rose and filled his hypodermic.

"This will stop it for a time. Go home and take a starch bath. Then rub down with calamine ointment. If the itch comes back, stick it out as long as you can before calling me. I'll probably be within reach at home all the evening. If not, the housekeeper will give you the name of another man. He will know what to do."

As the powerful shot took effect, the intolerable itching became bearable, and Crane began to doubt that his discomfort was more than an attack of nerves. Nevertheless he carried out the doctor's instructions to the letter.

"Safety first," he grinned, stepping from the milky starch bath and reaching for the towel. In his eagerness to live up to the doctor's orders, Crane hastened to dry himself thoroughly and rub down his whole body with calamine before even pulling the plug of the bath tub. Having finished his rub, he turned round to let the water out, and stopped short with an exclamation of amazement. The water, milky white less than five minutes before, was now a vivid pink. Even as he watched, the color deepened from red to crimson. In ten seconds the strange fluid had taken on the characteristic hue of freshly shed blood. Crane flung on his bathrobe and ran to the telephone.

In his haste to call Doctor Brown, Crane forgot to shut the bathroom door after him. His landlady chanced to pass along the corridor on her way down to the kitchen, just as Crane, in the telephone alcove, took down the receiver. Like the good housekeeper she was, the landlady made a move to close the bathroom door on her way past. The bathtub full, apparently, of human blood, paralyzed her for two seconds before she screamed. As she fled shrieking from the house, Crane succeeded in getting his connection. Doctor Brown, listening at the other end of the wire, heard ear-splitting shrieks and a man's voice which he failed to recognize as his patient's requesting him to come at once to Crane's apartment. He banged the receiver back on the hook and grabbed his emergency kit. Crane, he imagined, driven insane by his torments, had attempted to commit suicide.

On reaching Crane's apartment house, the doctor ran slap into enough excitement to justify a dozen murders and suicides. The landlady, in hysterics, was being supported on the lawn by two sympathetic neighbors. Crane, gorgeous in a flaming orange bathrobe which flapped about his long legs, was doing his best to convince three motorcycle policemen and a clamoring mob of morbid sensation hunters that he had committed no murder, but had merely indulged in a late afternoon bath. The police had their hands full keeping the mob back from storming the entrance.

With the skill acquired from many adventures with crowds and accidents, Doctor Brown insinuated himself into the mob and quickly worked his way to the police.

"I'm the doctor they telephoned for. What's up?"

"Nothing," the officer replied disgustedly, "if that fellow in the kimono knows what he's talking about. Go in and 'phone headquarters to send half a dozen men to help us."

Brown joined Crane on the porch, snatched him into the house, and bolted the door. Then he telephoned to the police.

"What happened?" he demanded of Crane, on receiving the Chief's assurance that the riot squad was on its way.

"I followed your instructions," Crane grinned. "Come and have a look at the bathtub."

With dramatic effect, Crane ushered the doctor into the bathroom and gestured toward the tub. Then his jaw dropped. The water was as starchy white as when he had stepped from the tub. Not a trace of all that violent blood remained.

"Well?" the doctor demanded meaningly.

"The landlady saw it too," Crane began. "I'm not crazy."

"Saw what?"

Rather shamefacedly, Crane gave a short but complete account of the entire incident as it had seemed to happen. To his surprise, Brown did not laugh.

"You think there may be something in it?" Crane ventured.

Brown was non-committal. He suspected Crane of a nervous breakdown, but refrained from saying so. The landlady doubtless had been scared half out of her senses by some stupid practical joke on Crane's part. He might even have pursued her with his razor.

"Let me take your temperature."

Crane submitted. His temperature was normal. So, as far as Brown could judge, was everything else about him. The theory of a nervous breakdown was abandoned.

"Find me a clean, empty bottle or a jam jar. I'll take a sample of the water and find out if there is anything wrong with it."

While Crane rummaged in the kitchen, the doctor carefully salvaged the teaspoonful of starch remaining in the empty cardboard container. He was just conveying this to his bag, when the front door bell began ringing insistently. At the same instant Crane reappeared with a clean ketchup bottle.

"Don't answer the bell till I fill this. Otherwise the

police may smell a rat and bring the reporters down on our necks."

Hastily stowing the bottle of starchy water into his handbag, Brown followed Crane to the front door. The instant the bolt was drawn, a hard-faced captain of detectives thrust himself into the hallway.

"Where's the bathroom? You show me," he suggested grimly, seizing Crane's arm.

"Sure," Crane grinned. "The whole city waterworks, if you like."

Deigning no reply, the captain hustled the suspect upstairs. Once in the bathroom he gave a disgusted grunt at the tub, picked up the rag rug, scrutinized it thoroughly, and finally inspected the articles in the toilet cabinet.

"Does your landlady drink?" he demanded sourly.

"Never touched a drop in her life," Crane gallantly assured him.

"Then she's bughouse. If she throws another party like this one, she goes to the asylum. Tell her that from me."

Turning on his heel, he quit the profitless investigation and clumped downstairs. In his cocksureness that he saw through everything, he overlooked the one clue of any value. It did not enter his head to quiz the doctor then waiting in the hallway till the quieted mob should disperse. What was a doctor doing in the house if everything was as it seemed to be? Who had called him? Why? For failing to think of these pertinent questions the skeptical captain deserved to lose at least one stripe. Brown, for his part, tried to make himself and his telltale black bag as inconspicuous as possible. He might have saved himself the trouble; his estimate of the captain's intelligence was several points too high.

THE moment the front door closed on the redoubtable captain, Brown darted for the stairs. He met Crane half way.

"If your skin starts itching again, come to my house at once. I'll give you a bath. Tell the landlady the heat affected her. I'll speak to her on the way out."

"You think——" Crane began.

"Nothing. But it will be worth while to analyze this water, or whatever it is. Well, I'm going before the reporters arrive. They will have got wind of this at the police station. If anyone asks you anything, leave me out of it. I can't afford this kind of advertising."

By the time Crane was dressed, the disappointed mob had dispersed, and the distraught landlady was doing her feeble best to fend off the persistent attacks of three able young reporters. Crane routed them.

"Beat it," he ordered curtly, entering the living room. "Can't you see that this lady is suffering from the heat? That's all there is to it. If you can make a story out of that you beat Hearst. Only," he concluded with a grin, as he bowed them out of the house, "the city editor will scrap what you write. It would be a slam at our beautiful climate. There's a dog fight down the street. Try your luck on that. Scat!"

Having disposed of the press, Crane returned to the sitting room to comfort the landlady.

"Is there anything I can get you?" he asked sympathetically.

"If you don't mind, you might bring me a little gin and water—not too much water. The bottle is on the top shelf of the kitchen cabinet."

The last information was superfluous so far as Crane was concerned. He had discovered the half empty bottle while rummaging for what the doctor wanted. He was careful not to ruin the landlady's pick-me-up by too much water. In fact he gave her half a tumberful straight, which was just what she needed. As she sipped the fiery stimulant, the poor woman felt as guilty as sin. She resolved to make the present bottle her last. Bathtubs full of sudden blood are too high a price to pay for a quart a day. To her credit, she lived up to her resolution. This was a pity, as gin afforded the poor woman her one escape from her humdrum existence, and she had a constitution that sulphuric acid could not have corroded. When Crane learned of her self-denial he felt quite conscience-stricken. But he dared not tell her that her vision was a sober fact. Her first act would have been to eject him from his rooms, as an incurable of some particularly dangerous kind. Then, to square herself in the eyes of her neighbors, she would have confided the whole grewsome truth to the avid press.

Having seen to the landlady's comfort, Crane attended to his own. He slipped out to a restaurant, had a square meal, and hurried back to bed. By eight o'clock he was between the sheets, determined to sleep in spite of the faint prickling all over his body. It was beginning again gently; wondering whether he could cheat the enemy by falling asleep, Crane dozed off. He had won, for the time being.

THE moment he had finished his dinner, Doctor Brown settled down to analyze the starchy water. Not being a skilled chemist he had to try the only method in which he was expert—microscopic examination. Should this reveal nothing unusual, he would submit a sample of the water to a competent chemist for detailed analysis.

Brown approached his problem with an open mind. Having profited by an excellent medical training, he was not addicted to forming opinions in advance of the evidence. There might be precisely nothing strange about that starchy water, or it might give a patient observer his first glimpse of a new universe. The doctor was ready for either contingency, or for neither.

With matter of fact deliberation he prepared the slide and carefully adjusted the microscope. Long years of habit enabled him to come within a shade of the true focus without looking through the eyepieces. His instrument was a high-powered binocular, which threw up the minute objects on the slide into solid relief. Having adjusted the focus roughly as far as was safe, Brown completed the delicate operation while looking through the eyepieces.

The singularly beautiful starch grains swam into stereoscopic view and blurred out, as the slowly moving lens sought to bring up the light from still minuter specks within reach of human vision. On the extreme threshold of visibility, a new universe slowly dawned.

The silent watcher of that undiscovered heavens scarcely breathed. Hour after hour he sat entranced, far from this world, as the first acts of a titanic drama, never before imagined by the human mind, unrolled majestically in a drop of water so tiny that no unaided eye could see it.

While one man followed the dim beginnings of a new order in wonder and awe that fateful night, another, blind with hatred and ignorant of what he was doing, sought to destroy the instrument of fate which had thrust the unknown universe up to the light and life. True to his brainless vow, Bork got soddenly drunk as fast as bad whiskey would let him. A dispassionate critic from a wiser planet, if confronted with Brown, Crane and Bork, that evening, might well have doubted that the three were animals of one and the same species —*homo sapiens*, so-called. Brown and Crane he might easily have classified as sports from the same family tree; Bork undoubtedly would have puzzled him.

The vile whiskey, more like crude varnish and alcohol than a civilized drink, had an unprecedented effect on Bork's exhausted body. His customary experience after

a full quart of the stuff was a feeling of general well being and a greatly inflated self-esteem. This spree was strangely different from all of its innumerable predecessors. Instead of experiencing the comforting glow which he anticipated, the wretched man felt chilled to the bone. The world turned gray before his eyes. He saw his own life, pale and ineffectual as a defeated spirit, wandering aimlessly hither and thither through a cheerless fog of unending years. Why must he endure it longer? The drink had made him deadly sober. A remorseless tongue, loosened by the alcohol, insinuated that he was an unnecessary accident, a dismal thing that should never have been trusted with life, and a mistake to be corrected and forgotten as quickly as possible. Crane was right, the unhappy man admitted although he had never put his estimate into cold, precise perspective, as Bork's own silent accuser was now doing. The very unconsciousness of Crane's contempt was what stung.

Bork sighed, slowly extracted the cork from the second quart, poured out a tumblerful of the raw stuff, and sat meditatively sipping it. As the alcohol seeped into his tissues, the insane clarity of his mind increased.

By midnight he had disposed of three full quarts of alleged whiskey. This equalled his previous record. By one in the morning he had bettered his record by a quart and was ripe for his insanely logical action. In his normal state he could not have reasoned so coldly, so clearly, so consistently. Crazed by the drink, he became as rigidly logical as a hopeless maniac. Glancing at his watch, he rose steadily to his feet, and marched from his frowsy lodging to execute his purpose and to silence that persistent voice which said he was born a fool.

No one meeting him on the street could have guessed that he was not cold sober. That is exactly what he was. For the first time in his life Bork had discovered himself, completely and without the slightest reservations of false self-respect. He proceeded through the night with a firm, resolute step, like a plucky man going to the electric chair and determined to die game.

IT was a few minutes past two in the morning when Bork silently let himself into the twenty million volt laboratory and locked the door behind him. His immediate business was too serious to admit a smile. Yet he almost smiled as he reflected that Crane would have the satisfaction of thinking—not saying—"that fool Bork has blundered again."

Crane's exasperating silence had given Bork the first inkling of the bitter truth. Now he, the despised assistant, the man who might easily have been chief had nature not loaded the dice against him, would prove that he was the better man in one thing at least—unanswerable destruction. Crane, the arrogant, strong man, whose vice was pride in his easy strength, should learn the meaning of frustration.

The man who can hurt his friend is, after all, the stronger of the two. Bork switched on the floodlights and prepared to prove his superior strength.

He set about his awful business deliberately, determined for once not to blunder. Having descended the steel stairs to the vast pit of the transformers, he made the necessary connections to link up the forty huge gray devils into a single unit. The forty were now ready to smite as one, with the full bolt of their twenty million volts, whatever accident or design might offer them to destroy. Like a callous priest preparing a peace offering to Moloch, Bork quickly and accurately made ready the pride of Crane's heart as a sacrifice to the forty united devils. The two million volt X-ray tube, Crane's "baby," was linked into the chain of destruction to appease the forty and prove Bork a better man than his tormentor.

His preparation was not yet complete. Not only must Crane be humbled, but the pitiless logic of his own subconscious mind must be refuted forever. He connected one end of a long, stout copper wire to that which was to feed twenty million volts into the X-ray tube, made a large loop of the free end, passed the loop over his left arm, and dragged the trailing wire after him up the steel steps to the gallery of the switches.

To secure the effect he wanted, all switches must be closed simultaneously, releasing twenty million volts in one flash. This presented no difficulty. The switches he must use were ranged in one horizontal line eight feet long. Temporarily winding the loop round an iron upright, Bork was ready for his problem.

First he all but closed the whole row of switches, bringing the eight foot line of ebonite handles into the same sloping plane. Then he glanced about for a narrow eight-foot board or strip. The pile of scrap lumber, behind which Crane had thrust his hand to scare out the black widow, contained just what Bork sought. At the bottom of the pile were several narrow lengths of white pine, the remains of large packing cases, from six to twelve feet long and four to six inches wide.

Taking no chance of encountering another venomous spider, Bork disengaged the desired piece of lumber with his foot before venturing to pick it up. Then, ashamed of his lack of courage in the face of what he was about to do, he propped the narrow board against the iron railing and turned to the bench beneath the switches. To prove himself not an utter coward, he put forth a steady hand and raised the lid of the cigar box into which Crane had dropped the crushed remains of the black widow.

She still lay there, black and venomous looking as death itself. Every fiber of her apparently was dead. As he stared down in cold fascination at the hideous, crushed thing, Bork detected not the slightest tremor in any of her eight long, smooth, black legs. All were curved stiffly inward, rigid in death, above the red hour glass on her mangled body. She was dead. To put his sorry manhood to a crucial test before joining the thing he instinctively loathed in death, Bork put out a finger and lifted each leg in turn. Six remained attached to the body, two dropped off.

"Dead," he muttered, closing the lid of the cigar box to shut out the sight of that repulsive corpse which he no longer feared worse than death itself.

His final preparations were brief. In a few seconds he had the copper loop fastened securely about his neck, and the long narrow board evenly balanced in both hands. He laid the board lightly along the eight foot row of ebonite switches. Then, with a convulsive movement of both arms, he shoved the board back and down, instantly throwing in the full battery of switches and releasing the irresistible fury of twenty million volts to shatter everything in their fiery path, himself included, to a chaos of incandescent atoms.

The instantaneous surge of energy missed one of its marks. A deafening report followed the blinding green flash where the copper junction of the wire which was to have electrocuted Bork vaporized instantly. Before the current could leap along its entire length the first twenty feet of the wire exploded to atoms in a cloud of green fire. Bork's efficiency in making the connection had saved his life; a looser contact would have let but a fraction of the current through the wire to destroy him before it consumed the conductor. He had blundered again. His grandiose project had nullified itself in a short circuit which he should have foreseen.

Dazed and uncertain whether he was still living, he stared uncomprehendingly over the pit of the transformers and upon the X-ray tube. The floodlights, on an independent circuit, still filled the laboratory with

an intolerable glare. Not a trace of corona flickered on any of the apparatus. The giant transformers loomed up, cold, gray and dead. The echo of the exploded wire seemed still to haunt the oppressive silence.

Gradually the stunned man became aware of the X-ray tube. Built to withstand the impact of two million volts, it should have been annihilated under the surging shock of twenty million. Had it taken the full bolt, or had the half foot of wire from the cathode to Bork's too efficient connection volatilized before the current could leap the short gap? That it received at least a fraction of the intended maximum was evident, for the lower half of the tube quivered and scintillated in coruscating pulses of sheer white light. The upper half of the vacuum in the tube, from the cathode down, was as black as ebony. Impenetrable darkness and sheer light were severed from one another absolutely; no shadow from the black dimmed the upper brilliance of the seething light, and no pulse of the white fire greyed the massive black above the invisible barrier.

Whatever might be taking place in that tube, it was automatic and independent of any extraneous electrical influences. The wires connecting the tube to the feeding apparatus had burned out, and the entire laboratory, except the floodlights, was electrically dead. As Bork watched, the black crept slowly downward. The diminishing light, devoured from above by the descending void, increased in intensity, as if struggling fiercely to resist and vanquish the death which crept down upon it. To the dazed man it appeared almost as if a plunging piston of black steel were compressing the resistant light down to nothing.

Within three minutes but half an inch of dazzling white fire remained. Laboring against the last desperate struggle of the light to survive, the black crept down more slowly. The last half inch dwindled to a mere plane of light as fiercely brilliant as the furnace core of a star. Then, in a second, the last light vanished, and the tube, now wholly black, exploded with a report that rocked the laboratory like an earthquake and hurled Bork to the steel floor of the gallery.

When he came to his senses, he found himself staring up through a phosphorescent glow to the dimly visible concrete ceiling. The explosion which had stunned him had shattered the globes of the floodlights. He got to his feet and reeled toward the door, only to trip over the copper wire dangling from his neck. With a curse he freed himself and fumbled for his key. Some moving object impinged gently against the back of his hand, seemed to break silently, and dispersed, leaving behind it only a faint sensation of cold. Another struck him in the face, and again he sensed the outward flow of heat from his skin. He became aware that his hands and face were slowly freezing.

To escape from that silent place of horror was his one instinct. The key in his pocket eluded his clumsy, half frozen fingers. Still dazed, he did not seek to discover the source of those moving things that touched his bare face as gently as kisses in a dream and slowly drained his body of its natural heat. At last he managed to grasp the key and insert it in the lock. His chilled fingers refused to function. He began beating wildly with his numbed fists against the steel door, conscious that he was slowly dying. Almost together, two of the moving objects softly struck the steel above his head, lingered for a moment, and vanished into total darkness. He saw what they were.

The black air of the laboratory was alive with thousands of spinning vortices of faint light drifting in all directions, rebounding unharmed from one another when two or more collided, and dying only when they struck some material obstruction—walls, ceilings or apparatus. It was the mazy wanderings of this silent host which revealed the darkness against flickers and flashes of dim, tumultuous light. Their numbers diminished rapidly, for they seemed to seek their own extinction, quickening their motion as they drew near to solid substances and jostling one another in their eagerness to cease to be. In ten minutes the darkness would have conquered, but Bork did not wait to see its victory.

A slight rustling on the bench behind him made him spin round in anticipatory fear. Almost before the horror happened he sensed its advent. The lid of the cigar box, in which the crushed black widow lay, flipped up as if some frantic living thing were trying to escape. The lid subsided for an instant, then again flapped sharply up an eighth of an inch. Bork reached the door in one leap. This time his fingers functioned automatically. Glancing back as he flung open the steel door, he saw the dim phosphorescence of the expiring vortices, a sight that reached the very roots of his fear.

The lid of the cigar box was thrown completely back on the bench by a rapidly swelling black mass that foamed up explosively from the box like living soot. As he slammed the door with a reverberating clang he caught a last glimpse of the boiling black mass budding upon itself in furious vitality and overflowing bench, platform and stairs in one hideous deluge of unnatural life.

He turned the key in the lock and reeled off into the icy grey pearl of the stirring dawn, sane at last with an awful sanity such as he had never known.

CHAPTER III

Reborn

BORK roomed in a shabby house in a shabbier street, as the only lodger of a deaf and half blind old man, by the name of Wilson, who saw him only once a month to collect the rent. Old Wilson seldom knew when his lodger entered or left the house, and he cared less. What the old man had done for a living in his prime was more or less of a mystery. Report had it that he was a broken down Alaskan miner who had made and lost a dozen fortunes. Before going completely broke he had bought himself a shack of a house and invested his remaining capital in government bonds, on the meagre income of which, and the rent from the upstairs spare room, he eked out a Spartan existence. The place was ideal for Bork, who hated the habitual prying of even the most reserved landladies. Old Wilson never entered his lodger's room. Consequently it was cluttered with empty bottles shamelessly exposed in the most conspicuous spots.

In spite of his age, Wilson was not an early riser. He enjoyed his ten hours in bed best of the twenty-four. Doubtless the futility of being up and about, when he could see but little and hear less, impressed on him the wisdom of dozing away as much of his meaningless life as possible.

About half past four on the morning of his mad escapade in the laboratory, Bork stumbled up the rickety stairs to his room. The necessity for an alibi in case of investigations regarding the shattered tube was beginning to dawn on him. He knew that old Wilson would not hear him, so he made no effort to walk softly. The alibi presented itself ready made. At seven o'clock Wilson's customary hour for rising, Bork would hunt up the old man in his kitchen and pay the rent a day in advance. Then the old fellow could swear that Bork had spent the night in his room, and believe his oath. The early payment of the rent would arouse no suspicion, as Bork had frequently paid a day or two ahead of time.

Opening the door of his room, Bork found the light

still on. A half quart of whiskey stood on the untidy bureau. It was but natural in his shattered state that he should take a bracer to steady his lacerated nerves. He poured himself a stiff jolt and raised it to his lips. As the reek of the crude alcohol fumed his nostrils he was overcome by a strong feeling of revulsion. Yet he imagined that he needed the drink desperately. His attempt to swallow it proved unsuccessful; his body simply rejected the proffered mercy. A healthy young savage almost invariably rebels against his first swallow of raw whiskey, whatever may be his reactions to his hundredth. Bork was in precisely the same condition, except that his aversion was a thousandfold more intense. To down a drink in his present condition was impossible. Instinctively he hurled tumbler and bottle to the floor, smashing three empties in the act.

"What a fool I've been," he muttered. "I must have been sick as a dog to like that stuff."

Aware of an indefinable sense of power, he clenched and unclenched his fists, watching the ripple of the firm muscles beneath the skin. Presently he started. His hands, ordinarily a pasty yellow, were tanned a deep, healthy brown. He might have been working for months outdoors beneath a tropical sun.

A startled glance in the shaving mirror above the bureau confirmed his half formed suspicion. His face was as swarthy as a Hindoo's, and his yellow, fine hair had turned jet black and as coarse as an Indian's.

Even these radical changes, however, failed to account for the utter difference between the face staring wide-eyed from the dusty mirror and the familiar features which he remembered as his own. A more fundamental alteration had transformed his appearance completely. Suddenly he recognized its nature. His blue, cold eyes had turned black and strangely luminous. With a terrific shock he perceived also that he appeared to have grown younger.

In silence he slowly began removing his clothes. Five hours before his body had been like a young boy's, smooth, white, and practically hairless. Now his skin was the same rich brown hue, from heels to head, as his face and hands. Moreover, his chest, arms and legs were covered by a thick growth of coarse black hair like a professional weight-lifter's. From skin to marrow he was physically a different man. No one who had known him intimately five hours previously could have identified him as Neils Bork. This was a different man.

"Who am I?" he asked aloud, reaching for his shirt.

No sooner were the words out of his mouth than he realized two further changes from the man he had been, each of the profoundest significance. The querulous voice of Neils Bork had deepened and become vibrantly resonant. It was the voice of a man with both strength and personality and an assured confidence in his power to use them to his own advantage. It also was a voice that would attract women. Second, he noticed a new trick of habit, that was to become instinctive. The hand reaching for the shirt drew back, and for a simple, natural reason. The shirt was soiled. To put such a thing next to his skin—Bork had never worn underclothes—was an impossibility to the new man.

From the bureau drawer he selected his best shirt, a white linen freshly laundered, which he had worn but once or twice. The shabby suit was discarded in favor of his single decent one, a gray tropical wool. This he had not worn for over a year. The cut was a trifle out of date. That, however was of no consequence. The suit was wearable, having been dry-cleaned before it was put away. Clean socks, his best shoes and a plain black scarf, which he had discarded as being too tame after one wearing, completed his outfit. It did not occur to him to seek a hat; his thick, black hair afforded ample protection from sun and weather.

Although the dead Bork had been a heavy, consistent drinker, he was not absolutely thriftless. From a slovenly suitcase stuffed with soiled clothes and worthless letters from girls a little less than worthless, the new man extracted the "dead" Bork's carefully hoarded savings. These amounted to about six hundred dollars in ten and twenty-dollar bills.

By a quarter past five the new man was ready to face his dawning life. Thrusting the roll of bills into a trousers pocket, he started for the door. Then he remembered poor old Wilson's rent. Although neither alibi nor disguise was now necessary, the new man felt that it would be wise to dispose of the old forever. Having found a stub of pencil, he scribbled a note on the back of some forgotten girl's scented envelope.

"Mr. Wilson: The enclosed ten dollars is for the month's rent I owe you. As you will see from my room, I have been a steady drinker. The stuff has got me at last. Rather than give my boss the satisfaction of firing me, as he must sooner or later, I am firing myself. Give this note to the police. They will find my body in the Pacific Ocean if they want it, and if the crabs don't get it first.

Neils Bork."

On his way out of the house he slipped the envelope with the ten-dollar bill under the kitchen door. Old Wilson was not yet stirring. The new man took with him nothing but his money and the clothes he wore. No one saw him leave the house; it was still too early for decent workers to be going about their business. He strode briskly along in the clean morning air, conscious of a new vitality coursing through his veins like the elixir of life itself.

WHILE the man who had been Bork was confidently marching to meet his destiny, Crane lay tossing and muttering in his fitful sleep, tormented again by the prickling of his skin. Shortly after six o'clock he awoke fully and leapt from his bed. The itching was much less severe than the first attack. Nevertheless it was sufficiently distressing to make him hurry his dressing and rush to the doctor's house.

Brown had not gone to bed. The curious glance he shot Crane was almost hostile.

"What's up?" the latter enquired, feeling the doctor's restraint.

"That's what I want to know," Brown answered shortly. "Where have you been the past week?"

"At my usual stand," Crane grinned. "The workshop of the Foundation, the twenty million volt laboratory, at home in bed, and up the street three times a day on an average for my meals."

"Is that all?" the doctor demanded suspiciously.

"Sure. Where did you think I'd been?"

"I couldn't guess," the doctor replied slowly, "unless it might have been some low dive of Mexicans or Orientals. Whatever it may be that you've got yourself infected with is new to any science I know. Your case is unique. Itching again?"

Crane nodded. "Save the lecture till after you've cured me. Then I'll listen and admit anything you like."

"The cure will be easy enough. You must soak yourself in disinfectants till the last particle of scale or dust is sterilized and removed from your skin. It may be a long job. Take boiling hot baths and make yourself perspire freely before you rub down with the disinfectants. Then do it all over again two hours later. Keep at it until the itching stops completely. I'll write out the prescriptions."

"You seem sore about something," Crane remarked as the doctor handed him a sheaf of prescriptions. "Why don't you speak up and get it off your chest?"

"I will when I know what it is myself. You give me your word that you are telling the truth about what you have been doing?"

"Of course. Why should I lie? If you want to check up, ask the men at the Foundation and my landlady."

"Then," said Brown, "we are going to discover something brand new. By the way, I should like to examine your assistant—Bork, isn't it? Has he been working with you all the time?"

"In the shops, yes. But not in the twenty million volt laboratory. I must have put in thirty hours with my two million volt tube going at full blast during the past eight months. Bork hasn't been around it more than an hour all told at the most."

Brown considered in silence for some moments.

"Will you let me try an experiment with your tube?"

"Any time you like, if I handle the switches. I would let you do it yourself if you had worked around high tension apparatus. You give the instructions and I'll deliver what you want."

"Very well. How about one o'clock this afternoon? I must get some sleep first. You can go home and begin sterilizing your skin."

"That will suit me. I'll be in the high tension laboratory at one o'clock. Ring the bell and I will let you in. You can't give me a hint of what you think you're doing?"

"I could. But why go off half-cocked? Either this is the biggest thing in a thousand years, or I'm completely fooled. This afternoon will decide."

Doctor Brown's discovery was not, however, to receive its test so soon. The late Neils Bork had made that impossible. Many weary months of toil and speculation were to pass before Brown could recapture the first fine careless rapture of his glimpse at a new universe.

The doctor had intended going straight to bed the moment Crane left. Sleep, he now realized, was out of the question. To quiet his busy mind he must pacify it by consulting the voluminous biological literature that would at least eliminate the chance of making crude, ignorant blunders.

By good fortune the Aesculapian Society had a prosperous branch in Seattle with an excellent scientific library covering all phases of biology and medicine. Doctor Brown was local vice-president of the Society. His pass-key would admit him to the library at any hour of the day or night, a privilege not shared by ordinary members. He shaved, asked the housekeeper for a cup of coffee, pocketed the rough sketches of what he had seen under the microscope, and hurried off to the biological library. There he spent the five hours from seven till noon poring over biological atlases and massive treatises on the protozoa—those simplest of all animals.

With a sigh, as the clock chimed out a musical twelve, he closed his books and rose to prepare for his appointment with Crane. All his painstaking search had so far yielded no glance of a similarity between what was already known to science and what he had discovered. Thus far the outcome was encouraging. But the mass of ascertained fact about the humblest living creatures is so enormous that Brown estimated his good fortune at its precise value—nothing. A search of weeks would be necessary before he could assert confidently that he had made a vital discovery—if indeed he had.

His preparations for the approaching experiment with Crane were simple in the extreme. Having lunched at a cafeteria, he asked one of the girls behind the counter for a dozen raw, new laid eggs. Half of these were for the test, the other six to control the test. Part of the necessary apparatus he hoped to find in Crane's laboratory; the rest he must provide himself.

"Where can I buy a hen?" he asked the girl.

Thinking him slightly mad, the girl replied that there was a poultry market six blocks up the street. Brown thanked her and drove to the market. There he purchased the most motherly looking, clucking Buff Orpington on exhibit, a large slat coop to house her in, and loaded her on the back seat of his open car.

The spectacle of the well-known Doctor Brown threading his way through the traffic with an eloquent brown hen as passenger caused several traffic jams. However, he got his collaborator home safely and turned her loose in the walled back garden. Before leaving her to enjoy the tender young zinnia seedlings, he made a passable nest of excelsior in the slat cage and presented the prospective mother with half a dozen new laid eggs. With that attention to details which is half of scientific success, the doctor marked an indelible blue cross on each of the eggs, so that the 'controls' should not be lost among the mother's possible contributions.

"Do your stuff, Bertha," he counselled, carefully disposing three of the remaining half dozen eggs in each side pocket, "and I'll do mine. Good bye; I'm half an hour late already."

DURING the five hours that Brown was winding his devious way through mazes of the protozoa in the Aesculapian library, the man who had been Bork made rapid explorations into the wonders and mysteries of his transmuted personality. On reaching the main business street nearest his former lodging, he eagerly sought out a restaurant. The old Bork had always fought shy of breakfast, for obvious reasons. The new man was ravenously hungry. It was still very early. In his rapid walk he passed several cheap, all-night lunch counters, hesitated for a moment before each, and quickened his pace, to leave them behind as rapidly as possible. This swarthy young man with the strangely luminous eyes was fastidious to a fault.

At last he found what he wanted, a spotlessly clean, airy lunch room with white glass tables and a long cooking range under a hood and in full view of the customers. A girl in a white cap and clean white smock, her arms bare to the shoulders, was deftly turning flapjacks on a gasplate by the window. As the new customer entered, she glanced up from her work. Ordinarily a second's inspection of the men who passed her by the hundred every day satisfied her curiosity. There was an undefinable 'something' about this new man, however, which riveted her attention instantly. Unconscious that he was being watched, the swarthy young man walked to the far end of the room and sat down at a small table. A smell of burning hot cakes brought the girl out of her dream.

"That's somebody," she remarked to herself, but half aware of what she meant. She was right. This man was 'somebody,' not a mere 'anybody' undistinguishable in any significant way from tens of millions as commonplace as himself.

The 'somebody' was giving his order to an elderly man waiter who stood, pad in hand, trying to concentrate on his job. But he could not.

"Excuse me, sir," the waiter began diffidently, "but haven't I seen you in the pictures?"

"Pictures? I'm afraid I don't understand."

"The movies, I meant."

The 'somebody' threw back his head and roared with a deep, resonant laughter. It was an echo of the laughter of the gods. Early breakfasters turned in their chairs fascinated and amused by that hearty, good-natured shout, wondering what the joke was. Then they saw the young man's face and studied it openly, curiously. What was there about him that instantly attracted all who got a square look at him?

"He's not American," one man remarked to his companion.

"No, nor Mexican, in spite of his hair and complexion. Who and what the dickens is he, anyway?"

The embarrassed waiter stammered an apology.

"That's all right. No, you have never seen me in the movies, and I hope nobody ever will. Ask the cook to hurry that order, like a good fellow, will you? I'm starving."

Still unconscious of the sensation he was causing, the stranger casually inspected the simple decorations and general arrangement of the room.

"It just misses being good," he thought. "What's wrong? Everything is clean enough, and the fresco doesn't jar like most."

The day manager had just arrived and was taking up his position behind the glass cigar counter. Seeing a new customer, and a distinguished-looking one, apparently in need of attention, he walked down to inquire what he wished.

"Have you been waited on?"

"Yes, thanks."

"Is there anything I could do for you?"

"Probably not. It's too late now. I was just thinking that the architect missed a masterpiece by a mere hairbreadth. If this room were three feet longer, two feet narrower, and seven inches higher, the proportions would be perfect. The tables don't fit, even now," he went on, unconscious of the astonishment on the manager's face. "Don't you see," he continued earnestly, "what a stupid waste it is to bungle a room that might be perfect if only a little forethought—not afterthought—were given to its design?"

"Excuse me, but are you an artist?"

Again the answer was a shout of laughter.

"No," the swarthy young man replied, subsiding. "And I never will be so long as I keep what mind I have."

"Then may I ask what your profession is, Mr.——?"

The luminous black eyes seemed for a second to look back and inward. What name should he give himself? For the moment, although his mind worked at lightning speed, the new man had difficulty in recalling what his name had been.

Bork; that was it. Obviously it must be discarded.

His eyes roved to the cigar counter.

"De Soto," he said, slightly altering the name of a popular cigar advertised in red and gold on a placard behind the counter. The name would fit Portugal, Mexico, Spain or South America and definitely rule out the Orient. Some touch of the torrid south was necessary to explain his coloring. An Oriental in America might reasonably expect hostility in certain States, while Latins or South Americans would be accepted as human beings.

It was a wise choice.

"I hope you will drop in often, Mr. De Soto," the manager replied with more than the perfunctory courtesy of business. He meant exactly what he said, for he, too, felt a subtle attraction to this dark young fellow who was the picture of health, and who could laugh so infectiously.

"I shall be delighted, whenever I am in the neighborhood."

His breakfast arriving at that moment, further exchange of civilities was left to the future, and the manager retired to inspect the ledger.

"'De Soto,'" he muttered to himself; "where have I heard that name before? Wasn't there an early Spanish explorer of that name? Still, this boy doesn't look Spanish, and he hasn't the trace of a foreign accent. He's somebody, whoever he is. I must ask him when he goes out what he does."

DE SOTO'S breakfast was perfectly cooked and beautifully served, from the rare tenderloin steak and crisp French fried potatoes to the sliced oranges. It was the breakfast that a strong laboring man would have ordered—if he could have afforded to pay for it. No modern business man or sedentary scholar could have looked it in the face. De Soto disposed of the last morsel. There remained only the black coffee—a reminiscence of the dead, shaky Bork. At the first sip De Soto hastily set down the cup. Even this mild stimulant reacted instantly on his perfectly tuned body. It was impossible for him to touch the stuff, and he finished his breakfast by drinking three glasses of water.

The sip of coffee had a curious effect on De Soto. Of what did it remind him? Someone he had known? No; that wasn't it. Everyone at the tables near his was drinking coffee and apparently enjoying it. Evidently it was a common and harmless indulgence. Then what was it that he was struggling to recall? It concerned himself, personally and intimately. Of that he felt certain. From the fast receding life which he had left behind him forever, a voice like that of a drowning man whispered "Bork". De Soto half remembered in a strangely inaccurate fashion.

"'Bork'?" he muttered to himself. "Who was Bork? Ah, I begin to remember. He was the man—electrician, or something of that sort—who committed suicide some months ago by drowning himself. Where did he do it? I seem to recall that he drowned himself in his room, but that's impossible. I've got it! The Pacific Ocean. Was it that? How could it be—it's too vague. The Pacific Ocean might mean anything from here to——."

His thoughts broke off abruptly, baffled by his inability to recall "China". Not only his own past was being rapidly swallowed up in a devouring blank, but also much of his elementary knowledge of the world which he had acquired as a schoolboy. For a moment he felt mentally ill. He knew that he should remember, and wondered why he could not. Some silent comforter put solace in his way.

"I cannot have lost all of my mental habits," he thought. Setting his teeth, he reached for the menu. "Can I still read? If not, my intellect is gone."

He opened the elaborate card. The effect was electric. Instantly the long pages of close print registered on his mind as on a photographic plate. Without the slightest conscious effort he had read and memorized two large pages of heterogeneous, disconnected items in a single glance. He smiled and reached for the morning paper which the man at the adjoining table had left behind. As fast as he could turn the thirty-two crowded pages he scanned them at a glance, photographed every item, whether news or advertisements, indelibly on his consciousness, and digested the meaning of all. Curiously enough he believed that he had "always" read in this manner. An apparent inconsistency, however, caused him a moment's uneasiness. There was much in the morning's news about the fighting in China. Reading of China, he visualized instantly all that he had ever known or imagined about that country and its people. Why then was he unable to remember the name when he tried consciously to recall it?

"I must have the stimulus of innumerable associations to think about any one thing, I suppose," he mused. "What was I going to do when I came in here? Breakfast, of course. But what had I planned to do next? It was connected with that man Bork's trade. Electrician. That was it. I know now; I was on my way to ask for work where I can study electricity, X-rays, and all that sort of thing. Why, I have always dabbled in electricity. How stupid of me to forget. My stomach must be badly upset. Well, I'll dabble no

longer. This time I go into it for all I'm worth. Where the deuce was I going?"

Suddenly the name Crane flashed into his mind. For no reason that he was capable of discovering, De Soto began to rock with uncontrollable laughter. There was a tremendous joke somewhere, but what it was all about he could not for the life of him say. Nevertheless he continued to shout with jovial laughter till the whole restaurant turned to stare at him. Aware of their puzzled faces, he made a pretense of reading the comic strips of the paper and controlled himself. It was time to escape before some shrewd busybody should guess the secret of his joke—which he did not know himself. That was the funniest part of it. Who and what was Crane? Whatever the elusive Crane might be, he was at the bottom of De Soto's haunting, mysterious joke. Calming himself, he beckoned to the waiter.

"Will you pay the cashier? I have no small change. Please bring me a telephone directory."

When the waiter returned with the change and the directory, De Soto tipped him generously and proceeded to look up Crane. There were several Cranes listed. Their first names or initials all seemed somehow wrong. De Soto closed the directory and let his mind drift. A single glance had sufficed to print the entire list of Cranes, their addresses and occupations, on the sensitive retina of his mind. One name, Andrew Crane, room 209, Erickson Foundation, seemed to stand out from all the others. Why? What was the Erickson Foundation? He decided to ask the manager on his way out.

"Can you tell me where the Erickson Foundation is?"

The manager gave clear directions for reaching it.

"What sort of a place is it?" De Soto asked. His tone implied that he wished to learn the public estimate of the Foundation, not what its specialty was. The latter, De Soto felt, might be a suspiciously ignorant question. Some monitor was prompting him to use caution; why, he could not fathom.

The manager, bursting with civic pride, enlarged upon the world fame of the Foundation, which was heavily advertised in the local papers. He even boasted that Doctor Crane had made the most powerful X-ray tube in the world, and was now nearly ready with a giant that would surpass anything the Foundation's jealous rivals could hope to produce for a hundred years—perhaps for two hundred. De Soto struggled again with that awkward impulse to burst out laughing. The manager concluded his booster talk by a direct personal question.

"Are you in the electrical line?"

"Only a student," De Soto replied instantly. "I plan to go into X-ray work as soon as I have finished my course." This straightforward reply seemed, to the man who gave it, to be the simple statement of an ambition which he had "always" held.

"Where are you studying, if I may ask?"

De Soto hesitated, nonplussed. Where, exactly, was he studying? Had he ever studied?

"Oh, I'm just reading by myself."

The moment he had uttered the words, De Soto knew that he had told a falsehood. Instantly he corrected himself. It seemed the only natural thing to do; the lie tasted worse than coffee.

"I meant to say," he apologized, "that I'm going to start my reading this morning."

"Oh," said the manager. Then, irresistibly attracted by this frank young man with the singularly penetrating black eyes, he added a word of heartfelt encouragement. "You'll make good. Some day we'll hear of you in the Foundation. Well, drop in again."

De Soto left the restaurant, followed by the hungry eyes of the flapjack girl and by those of every other woman in the place. Although he was now so far ahead of his past that to look back on Bork was impossible, he had a strange feeling of "difference". From whom was he different? The faces of the men and women he met gave him no clue. Many of the easy going Mexicans had hair as black as his, skins even darker, and eyes almost as black. Could he have remembered Bork's features to compare them with his own, reflected in the shop windows he passed, he would have noticed that his lips were fuller and redder than Bork's, and his nose more thoroughbred-looking than Bork's had ever been. His own nostrils were slightly distended, like those of a race horse eager to fill its lungs with all the fresh air blowing in its face, not close and pinched like Bork's. The whole "set" of the face bore not the slightest resemblance to that of the "dead" man. This was a countenance alive with purpose and the will to achieve it; the other was the peevish mask of a neurotic weakling. No feature of the "dead" man survived as it had been, and no trick of expression remained to betray the future to the past. But of this De Soto was wholly unconscious.

"Can you direct me to the Public Library, please?" he asked a traffic officer.

"Two blocks north—that way; three west."

HE reached the library just as the doors were opened. At the reference desk he asked where the books on electricity and X-rays were kept. To his surprise the middle-aged woman in charge did not reply immediately. She could not. Something in this strange young man's face reminded her of a boy who had been dead twenty-five years. There was not the slightest physical resemblance between the features of this dark-skinned, singularly intelligent-looking young man and those of the boy whose face had almost faded from her memory. Yet the one passion of her desolate life flamed up at her again as if it had never died.

"I'll show you where they are, Mr.——"

"De Soto," he supplied, wondering why she fished for his name.

"Pardon me for asking, but are you related to the Stanley Wilshires?"

"Not that I know of. I was born in Buenos Aires, and all my people have lived there for generations. Why do you ask?"

"You reminded me of someone—not your face, but your look. I must have been mistaken. Here are the electrical books. The X-ray material is in the next stack. You may use that table if you wish."

"Thank you. I shall probably stay here all day, as I have a lot of reading to do."

The librarian walked thoughtfully back to her desk. "I could have sworn it was Frank looking at me again. How silly!"

Many a woman was to experience a like feeling on first seeing De Soto's face. What attracted them, or what recalled the men they had loved, they could not have said, for it was beyond simple analysis. It was not an instinct for sympathy, for De Soto's face suggested confident strength rather than sympathy. Possibly the secret lay in the message of superb, clear vitality that shone from his eyes, recalling the heightened manhood with which these starvelings, in the fondness of their imagination, had once endowed their lovers—before they learned that fact and wishful fancy are a universe apart. Here was a man who lived with his whole body, as they would have wished their lovers to live, not rotting by inches year after year into a lump that was human only in name.

While De Soto in the Public Library, and Doctor Brown in the Aesculapian, unaware of one another's existence, were unconsciously storing up ammunition for a grand assault on one of time's deepest mysteries,

old Wilson precipitated the official suicide of Bork. On rising at seven o'clock to prepare his breakfast, the old fellow found the envelope with the rent. His eyes were still good enough to make out, in a hazy way, a ten-dollar bill. They also perceived that there was writing on the envelope. Poor old Wilson had a premonition of the truth: his precious lodger had decamped, and this was his heartless way of breaking the terrible news. Without stopping to get his breakfast he doddered over to his nearest neighbor's.

The obliging neighbor shouted the dire message, a word at a time, into Wilson's better ear.

"You had better tell the police at once."

"Eh?"

"The police. Tell them at once."

"You do it. I've got to find another fool to rent my room."

The neighbor obliged the old man willingly. The service would get his own name into print, a distinction which he had not yet enjoyed.

The ten o'clock "noon edition" of the evening papers gave the sublimated Bork a generous headline and toyed in audible whispers with the dead man's shocking allusion to crabs. They also, one and all, lamented the regrettable and undeserved notoriety which this suicide would bring upon the world-famous Erickson Foundation. For they had grown just a little tired of tooting the Foundation's siren for nothing, and decided now to recover their just dues by spreading some real news. To be worth printing, newspaper personalia must be spiced with more than a hint of scandal.

The Director of the Foundation first learned the facts from one of his enemies with a low taste for extras. This gentleman telephoned his sympathy—"I have just heard the distressing news. Oh, don't you know? One of your staff has committed suicide in a shocking manner—gave himself to the crabs. Who was it? Neils Bork. You say he was only a technical assistant? The newspapers don't mention that. This will be a terrible blow to the good name of the Foundation. Well, you may count on me to do what I can."

The Director preferred not to count on his friends. Instead, he got Crane on the telephone—following a long wait during which Crane hastily dried himself after his second stewing.

"What's all this about Bork committing suicide?" the Director snapped. "Suicide? I know nothing about it. You must be mistaken. Bork was all right when he left yesterday afternoon."

"The papers are full of it."

"Excuse me a minute. This is a shock."

Crane sat down suddenly on the chair beside the telephone and buried his face in his hands. In spite of his "kidding", he had liked Bork. For perhaps the first time he realized fully how deeply attached he had been to the surly fellow whom he had tried his best to make something of. Although reason convinced him that bad whiskey and not he was responsible for the tragedy, a deeper voice accused him relentlessly.

"If it is true, I'll see what can be done."

"Very well. Please come to my office as soon as you can. This will give us a black eye with the trustees unless we can hush it up."

"I'll be down in half an hour."

CHAPTER IV

The Widow's Revenge

ON reaching the laboratory shortly after one-thirty, Doctor Brown found a note addressed to himself stuck to the steel door by a strip of adhesive tape. It was from Crane, stating that he was "in conference" with the director, Mr. Kent, and asking the doctor to come to Kent's private office.

Not having seen the extras featuring Bork's suicide, Brown wondered what was up. "In conference" usually meant a wigging for some unfortunate member of the staff. Brown knew Kent well and did not exactly respect him. Kent, whose talents were purely political and administrative, boasted only a high school education. For his particular job he was competent enough, although his outlook was essentially unscientific. In matters of unimportant detail he was a martinet of an extremely exasperating type. Being what he was, and not being what he wasn't, Kent found his domineering fussiness and his social cowardice hotly resented by the eighty highly trained men under his alleged control. But, as he was the chosen of the trustees, the scientists of the Foundation had to grin and bear him. In all fairness to Kent it must be admitted that he was highly efficient in the particular task for which the trustees had picked him. This was the rather ticklish job of coaxing superfluous cash from retired millionaires, who nervously foresaw their rapidly approaching passage through the needle's eye mentioned in Scripture.

The eighty under Kent's nominal kingship treated their malevolent despot with a mixture of amusement and contempt. As the least of them had three or four times the ingenuity and imagination that Kent could claim, they made of his life a very creditable imitation of hell. Baiting Kent became the favorite pastime of their idler moments. When research palled, these misguided men would put one of their number up to making some perfectly outrageous demand of the harassed director. Then, when Kent naturally refused, the petitioner would indignantly "resign". This always brought Kent to his knees instantly. To go before the trustees and admit that the Erickson Foundation was not a cooing dovecote of high-minded scientists, who were toiling only for the good of humanity under their director's brooding benevolence, was more than the poor man could face. Harmony and cooperation, service and uplifting self-sacrifice being the director's official slogan, he dared not confess that "his" men were a thoroughly human lot, with all the self-interest of the average man, and a perfect genius for making themselves, on occasion, as irritating as a pack of discontented devils. Kent would have been happier as manager of a five-and-ten-cent store, where he could have hired and fired with Jovian irresponsibility.

In spite of his tactlessness and his aggressive stupidity, Kent had one feature—if it can be called that—which redeemed him almost completely in the eyes of his subordinates. His nineteen-year-old daughter Alice, fair-haired, violet-eyed and altogether wholesome with her keen sense of humor, was adored by every man on the staff, from the tottering De Vries, seventy years old, but still with the mind of a man of forty, to the gangling youths fresh from the university and just emerging from their rah-rah, plus-fours stage of development.

But for the alluring Alice, it is doubtful whether a single member of the staff would ever have attended the tiresome teas and deadly dinners which Kent imagined it his official duty to inflict on his imagined slaves. Even a funeral or a college commencement, they agreed, would have been lively with Alice as hostess. Kent, for his part, worshiped her from heels to hair. It was rather pathetic to see the jealous care with which he hovered about her when some attractive young man seemed to be getting on too fast in her affections. The husband of Alice, if poor, futile Kent could choose him for her, would be so impossibly perfect as to be a mere platonic ideal. He secretly hoped that her disconcerting sense of humor would keep her a spinstress, at least until he was a handful of ashes in a white jar.

He made his perilous way up to the steel girders, kicked a foot-way free for himself along the broadest, and coolly inserted a new light globe.

On entering the holy of holies, Brown found Kent and Crane glowering at each other across the broad expanse of a mahogany table that looked almost as if it were not veneer. Sensing that the interview was now at the resignation point so far as it concerned Crane, the doctor made a motion to withdraw, but Crane irritably motioned him to a chair.

"There's nothing private," he announced. "Mr. Kent and I have been discussing Bork's suicide. I'll be ready for your experiment in a moment—if Mr. Kent doesn't force me to resign."

"Bork's suicide?" the doctor echoed. Brown seldom bought an extra; the war had cured him of the vice.

"Yes. Last night. The facts seem to be clear. It's the ethics of the situation that are worrying Mr. Kent and me. I see it one way; he, another."

"You might compromise," Brown suggested. It was not the first time he had acted as liaison officer between Kent and his unruly staff.

"Precisely," Kent took him up eagerly. "We must cooperate. Doctor Crane, unfortunately, refuses to see the absolute justice of my stand."

"If he did," Brown smiled, "he would have to surrender, wouldn't he? I shouldn't call that much of a compromise. It takes two to dispose of cold crow, you know—one to dress it, the other to eat it. Who is the chef in this instance?"

Crane's long jaw set obstinately.

"I am," he assented defiantly. "Mr. Kent insists that the good name of the Foundation be preserved at all costs—even that of common decency to a dead man, who, naturally, can't speak in his own defense."

"Excuse me a moment," Brown interrupted, "but aren't you beginning to itch again? You see," he continued, turning to the glowering Kent, "Doctor Crane is rather irritable today. By working around his two million volt tube without even the precautions of common sense, he has got his skin and his temper into a

very ticklish condition. Nothing serious, of course; merely hard on the disposition. So you will pardon his rudeness," the doctor concluded with a disarming smile, "if he forgets himself. Very well, Doctor Crane, go on; sorry I interrupted you."

"Mr. Kent has been listening to a lot of old wives' gossip. Somehow it had got around that Bork was a soak. Can you prove it, Mr. Kent? No? Well, then shut up. I mean exactly what I say," Crane continued, lashing himself into a passion and entirely disregarding the doctor's warning look. "If you dare to give the papers any such scandalous lie about Bork, I'll give them a better one about how you run this Foundation. You're not going to throw mud all over a dead man's name just to save what you think is the honor—it hasn't any—of this corporation. All the Erickson Foundation gives a damn about is the patents it gets out of its employees for the usual nominal fee of one dollar—and you know it. There is no question of ethics here. You have none, the Foundation hasn't any, and I don't know what the word means. Get the point? The best man—or the biggest crook—wins. That's all. This time I win; you lose. You give it out to the papers that Bork was temporarily insane from a nervous breakdown, or I'll resign and tell the yellow rags why."

CRANE had gone too far. His itching skin had betrayed him into a complete statement of the contempt—justified, perhaps—in which he held his job, the director, and the canny corporation for which he worked. The fact that he obviously meant every word he said did not lessen the enormity of his offense in the eyes of the outraged director.

"This," said Kent in a cold rage, "is insubordination. I would be quite justified in recommending your instant dismissal to the trustees."

Crane gave a short, contemptuous laugh.

"What do I care for your silly job? I can get a better one tomorrow. You know as well as I do that I'm the best X-ray man in the country. You see, I'm not fainting from false modesty. Call in your stenographer and dictate that letter to the papers. Otherwise you can have my resignation here and now. That's final."

"You heard him," Kent exploded, turning to the embarrassed doctor. "Is that a proper way for a subordinate to address his superior? I shall report him to the trustees. You are my witness."

"'Superior' be damned," Crane cut in before Brown could attempt to restore diplomatic relations. "Are you going to dictate that letter to the press? Yes or no?"

"No," Kent snapped. But it was a half-hearted snap, such as an aged and ailing turtle might have given his persecutor.

"Then I resign," Crane announced, rising to his feet. "Explain why to your precious trustees. If you don't, I will."

"Sit down," the doctor commanded sharply. "You are both making fools of yourselves. The only excuse for you, Crane, is that you have let a little itching get the better of your temper. I know personally," the doctor continued, turning to the enraged director, "that Doctor Crane has the very highest regard for you personally and for your amazing success in running the Foundation. Can you afford to lose such a man—your most loyal collaborator? You know you can't. Why not compromise? Crane agrees to stay in exchange for a short statement from you to the press clearing Bork's name. Bork, I gather, has committed suicide in a fit of insanity brought on by overwork. Why not state the simple fact plainly, Mr. Kent? It is no reflection on the Foundation or on your policies. Hundreds of men work themselves to death every year in the United States alone. And why not? It's better than ossifying."

Kent glared at Crane, a hard, newborn hatred such as he had never before experienced toward his "subordinate" wrestling with his common sense. The thought that Alice seemed to prefer this lank, outspoken Texan with the uncompromising jaw to any of the other younger men on the staff, but added more fuel to Kent's cold, smouldering rage. By openly defying his nominal superior, and showing him up in the presence of a third party for the overstuffed effigy which he was, Crane had earned the director's lifelong enmity. Kent was shrewd enough in a shoddy, political way in dealing with human nature. He resolved on the spot to do everything in his petty power, by underhand suggestion and faint praise, to turn his daughter against this man for whom she had more than an incipient fancy. A dozen promising attacks flashed across his narrow mind as he scanned Crane's frankly scowling face, his own gradually assuming the bland benevolence of a well-steamed suet pudding. In more senses than one it was a historic moment, although neither man could possibly have foreseen the strange consequence of their mutual folly. Doctor Brown, mistakenly inferring from the director's expressionless face that the storm was over, managed to wink at Crane unobserved by Kent.

"I withdraw my resignation," Crane mumbled, rightly interpreting the doctor's wink. This row was to end as all such rows invariably ended, in a climbdown by the director. So Crane in his easy self-confidence imagined. As a matter of fact, he had not only cooked his own goose to a turn, but the unsuspecting Alice's as well.

Kent apparently swallowed the bait—again as usual. The magnanimous director rose from his swivel chair and walked clear round the table to extend to the contrite Crane the manly hand of forgiveness.

"And I," he promised with pompous solemnity, "will give the papers the simple truth that Neils Bork died a martyr to science, betrayed to death by his own zeal in the service of knowledge and the pursuit of truth." The director inflated his chest, and Crane smothered a grin. "As you have well said, Doctor Brown," he continued proudly, "the shoulders of the Erickson Foundation are broad enough, and strong enough, to support the truth, the whole truth, and nothing but the truth."

It was a rotund utterance, worthy of the fattest of the innumerable commencement addresses which Kent was in the habit of inflicting (by invitation of boards of trustees as progressive as his own) on successive generations of young skeptics, all over the United States, who have outgrown this particular brand of twaddle. Yet, such an indurated ass was the good director that for the holy moment he believed every word he said. What he truly meant, in his subconscious mind, was roughly as follows: "You, young man, have made a fool of me before this doctor friend of yours. I shall wait until your back is turned. Then I will stick my longest knife clear through you. And it will hurt, for I shall turn it."

Feeling that the honorable director was, after all, rather a slippery mackerel, the conspirators deferred their departure until Crane had the meticulously dictated lie to the press firmly in his competent right hand. As a further proof of their sound appreciation of the good faith of the born administrator, they lingered until the message was safely delivered to an eager reporter summoned by telephone. Then, and then only, did they venture to take their respectful leave.

"And to think," Crane remarked viciously, as the massive door of the inner sanctum closed noiselessly behind them, "that he is the father of Alice. It's impossible."

"Heredity is a theory," Brown admitted, "in this case, any way, and environment an illusion. The Kent

family alone would disprove half of our biological guesses. And I'm going to take a crack at the other half."

To Crane's wondering eyes the doctor complacently exhibited six large, clean hen's eggs.

"Here's my apparatus. You have heard of Watson's experiments with fruit flies? Well, I'm going to try something similar. Flies don't prove very much for human beings. Hens are nearer our own kind."

"But a hen is essentially a reptile," Crane objected vaguely, as some shadowy reminiscence of his high school biology flitted across his electrical mind. "Birds came from snakes, didn't they? And we branched off from monkeys."

"Go far enough back," Brown suggested lightly, "and you'll find our common ancestor where the mammals sprang from the effete reptiles. No matter how far back you look—provided you stop within a few ages of the protozoa, you won't find any of our cousins among the insects. We may not resemble hens very closely, but we are more like fowls than we are like flies. Watson's work was great as a beginning. It was tremendous. He discovered a new world. I want to take the next obvious step. Is your tube working all right?"

"It was when we quit yesterday," Crane replied, inserting his key in the lock of the green steel door. "What an awful smell! Do you get it?"

Brown sniffed critically.

"That's organic matter decaying. I should say——."

What he was about to add remained unsaid. A terrific odor gushed out at them, beating back their feeble assault upon the pitch darkness of the laboratory. Not to be defeated by a mere smell, Crane flung a flap of his coat over his nose and mouth, and groped desperately for the switch controlling the floodlights. The switch clicked its futile message.

"Dead," Crane exclaimed, referring to the lights.

"Check," Brown muttered through his handkerchief, imagining that Crane referred to the overpowering reek. "This is more than organic decay. Don't you get a metallic taste as well? What on earth——"

BROWN'S further observations were strangled in an involuntary croak of instinctive horror. He had followed Crane along the palpitating darkness of the steel gallery of the switches when suddenly, from the sheer blackness above him, eight clammy "arms", colder than the black death and slimier than a decaying tangle of kelps, descended upon his head, chest and shoulders in a loathsome embrace. Instantly he was out of the laboratory, struggling like a madman to free himself from that frigid abomination adhering to the upper part of his body with all the chill tenacity of a dead octopus. Crane followed, shaking from head to foot.

Once in the glaring sunlight, the horrified men saw in a flash what had descended upon the doctor. Crane tugged it from the doctor's shoulders and hurled it away with a shudder of disgust. It was a hideous knot of eight smooth, slimy black legs, each about four feet long, still adhering crazily to the tattered fragment of a huge black thorax on which the dull red imprint of an "hour glass" was plainly visible. The rest of the monster's body had already evaporated in foul decay.

In petrified fear they stood staring at the remains of this unspeakable abomination which seemed to contradict nature, but which in reality merely emphasized her commonest manifestation. The enormous size of those obscene legs was no more than the natural outcome of the sudden overthrow of a delicate balance holding normal growth in check. Destruction of certain glands in the human body, or misguided tampering with their perfectly adjusted excretions, might well result in a corresponding monstrosity of a man. What had suddenly shattered the mechanism of control in this instance? Neither man could guess, although Brown might have suspected, had he known the details of Bork's attempted suicide.

The full sunlight had a horrifying effect on the remains. First the smooth black legs swelled slightly, as if filled with an expanding gas. The crushed legs then stiffened and straightened slightly under the increased pressure, and the skin tightened. Was that horrible fragment trying to live and walk? The pressure increased, and the legs began to glisten as if recovering their vitality. Then the joints of all cracked simultaneously; the eight black husks collapsed under the escaping gas, and all rapidly withered, wrinkling in black decay, like the skin of a perfectly embalmed mummy suddenly exposed to the light and air after centuries in the cold darkness of its hermetic tomb. Within ten seconds only a tangled knot of shriveled wisps of skin remained.

The two men stared into one another's faces.

"Did you see it?" they panted together.

"I don't believe it happened," Crane muttered. "We're both crazy."

"But the smell? It's still pouring out of that door. We must see what is in there."

"Not without a light. I'll lock the door and leave you on guard. If anyone wants to get in tell them we have an experiment going, and say I asked that everybody keep out for twenty-four hours."

With shaking hands Crane locked the door and hurried off to the workshops. In ten minutes he was back, trundling an oxy-acetylene blowpipe with four cylinders of gas, half a dozen globes for the floodlights, and two electric torches. He had recovered sufficiently to minimize the danger.

"I thought we might want to clean up after we've seen what there is to see," he grinned, pointing to the blowpipe. "This will throw a four-foot jet of flame hot enough to scorch the devil himself. How are your nerves? The walk did mine good. After all there must be some simple explanation for whatever has happened. Anything that can be explained is nothing to be afraid of. Well, are you ready? We shall have to stand the smell." They knew that they were in an undiscovered world. Would either admit it? No. To be good sports in one another's eyes, they made light of their anticipated discovery. Such is science, and such is artificial human nature.

While Brown played one flashlight on the lintel of the steel door and spotted the other on the path that Crane must take through the darkness, the latter set his jaw and rolled the truck with the blowpipe up to the gallery of the switches. Then he hastily locked the door and left his key in the lock. The odor had decreased somewhat, owing to the partial airing the laboratory had received while the men stood viewing the dissolution of at least one of the dead enemy, but it was still foul enough. Tying their handkerchiefs over the lower parts of their faces, the two set grimly to work. Their first task was to obliterate every trace of nature's madness; theorizing on its probable cause would come later, if at all. For the moment they realized that nothing mattered but speed in sanitation.

Their first tentative moves were slow and cautious. Although the state of the air seemed to prove that no living thing yet lurked in the darkness, they did not rashly tempt death. Armed with the identical slat of white pine which Bork had used in his blundering attempt to electrocute himself, Crane cleared a path four feet broad for himself while Brown played the flashlights on the hideous things in his companion's way. In all sizes and twisted shapes of death, from balls of black

legs no bigger than a rat to contorted monstrosities like enormous jet black spider crabs, the rapidly decaying victims of their own uncontrolled vitality cluttered every yard of steel galleries and cement floors, and depended in loathsome festoons from every railing.

A sudden thud in the darkness to their left, followed by a dry rustle, brought both men to an instant halt, their skins tingling with an unnatural fear. Sweeping his flashlight up to the ceiling, Brown saw what had happened. From every steel girder hundreds of the dead enemy hung in precarious equilibrium. Now and then one swayed slightly, its unstable balance shifting under the rapid progress of a ravenous decay that devoured the softer parts of the enormous body with incredible speed, and tilted the harder remnant of legs and carapace a hairbreadth downward toward the inevitable fall. Underfoot a thick, slippery scum of innumerable black bodies, from the size of wheat grains to mere specks barely visible, marked the sudden slaughter of a self-perpetuating host extinguished in the very act of seizing upon unnatural life.

How had they lived? On what had they fed? The long evil legs were mere distended sacs of skin filled with foul air. Had they swelled to their terrifying dimensions by assimilating the gases of the atmosphere and transmuting the dust particles of the air into the tenuous substance of their skins? It seemed incredible; yet, for the moment, no other explanation even faintly rational suggested itself. Presently Crane turned over two enormous black husks still intertwined in their death embrace. The hollow black fangs of each were sunk deep into the hard thorax of the other. Their first sustenance—whatever may have been its nature dissipated—the starving brutes had devoured one another.

"I killed a black widow in here yesterday," Crane remarked in a strained voice. "Or was it a thousand years ago? There must be some connection between that one and these. The mark of the red hour glass is on at least half of them. Those without it are the males. Look at those two—the bigger one has the hour glass, the other hasn't. The big one was the female; the other her mate. When she began starving to death, she tried to eat him, only he got his fangs into her, too. Then they both died. Does what I did yesterday explain this nightmare? You're something of a biologist; you ought to have a theory."

"I have," Brown admitted, "but it is worse than this nightmare. Don't go up that ladder! Some of them may still be alive."

Disregarding the doctor's horrified protests, Crane began climbing the vertical steel ladder against the side wall.

"Throw the light up ahead of me," he directed, pitching off two dangling carcasses from the fifth rung. "I've got to get up to the floodlights and stick in some new globes. Two will do."

He made his perilous way up to the steel girders, kicked a footway free for himself along the broadest, and coolly inserted a new light globe. As he screwed home the bulb, the light flashed on, revealing for the first time the full horror of that black shambles like a madman's dream of hell. Brown vented an involuntary shout, and Crane for a moment tottered as if about to lose his balance. Recovering, he walked coolly along the cross girder and screwed in the second bulb, about fifty feet from the second and directly over the pit of the transformers.

"Is that enough light?" he called down.

"Too much. I mean, I don't want to see it."

"You've got to, until we clean up this mess from floor to ceiling. While I'm up here, I might as well clear the rafters. You get a board and begin sweeping them into piles. There's a broom in the janitor's cupboard over there to the left."

FOR ten terrible hours they toiled in the noisome air of that nightmare tomb, sweeping the twisted black abominations into stacks, and applying the fierce white jet of the oxy-acetylene torch to each the moment it was ready. Nor did they neglect to spray the withering fire over every inch of the concrete floor. Some spark of vitality might still linger in the fine black sand of innumerable eggs, that had burst like capsules of ripe poppy seed from the bodies of the dead females.

At last, shortly after two in the morning, their gruesome task came to an end. Both men were sick from the foul, nauseating fumes, and exhausted of mind by their protracted battle with an enemy that had defied nature only to expire hideously.

"I dare not go to bed with that still in my eyes," Brown confessed.

"Nor I," Crane admitted. "Let's take a long walk and blow our lungs clean."

"That suits me. By the way, how is your skin?"

"Itching again. But I can stand it till morning. Anything would be bearable after that nightmare."

They emerged into the cool night air and filled their lungs.

"I never knew that air could taste like this," Brown sighed, exhaling and breathing deeply again. "Aren't you going to lock the door?"

"No. For once I'm going to break Kent's pet rule. This place must smell clean by morning."

"What about your tube? Somebody may come and tamper with it."

"That's so," Crane agreed. "Perhaps I had better look up after all."

He reëntered the laboratory and turned on the lights.

"The tube's gone!" he shouted. So engrossed had he been in the business of destroying the enemy that until this moment he had not noticed his loss. "There's nothing left of it but the concrete stand."

Brown followed him down the steel stairs to investigate. They found nothing that threw any light on the mysterious disappearance of the two million-volt tubes. Only a vitrified white patch on the flat top of the concrete stand hinted at some unusual disaster. An outgush of transcendent heat had fused the concrete into a glassy pillar. Glancing up, Crane saw the melted remnants of the connecting wires dangling from their support.

"Short circuited by some fool's carelessness," he muttered. "Whose?"

"Bork's?" the doctor suggested. "He would be the only man likely to experiment with your tube. None of the others have worked with it, have they?"

"No. Bork was the only man besides myself who ever touched it. If he did this, it was deliberate. No wonder he committed suicide. Probably he meant just to set me back a month or two and blew out the whole thing. Bork was always a bungler. This is what I get for trying to make a man out of a fool. Never again!"

They retraced their steps to the gallery of the switches.

"Look at that," Crane exclaimed, pointing to the long row of ebony handles pressed securely home. "He short circuited the whole battery of transformers, too. It will take a month to repair that fool's damage. He must have been drunker than usual. Then he committed suicide to escape going to the penitentiary. Well, he did one sensible thing in his life."

"What will you tell Kent now?" the doctor asked as they again emerged into the fresh air, leaving the door wide open. "Will you still stick up for Bork?"

"Why not? Calling him what he was won't restore my tube. And I shouldn't care if it did. Tomorrow I begin work on the twenty million volt tube. Someone will find the door open in the morning and report the damage to Kent. Then the papers will theorize that some enemy of the Foundation stole a key to the laboratory and did ten thousand dollars worth of damage at one swipe. I'll not contradict them."

They walked till sunrise, trying to purge their eyes and minds of the night's horror. The disappearance of the tube gave Brown a further clue to the mystery, but he did not confide it to Crane. Until he could learn more of the action of extremely short waves on living tissue he would keep his daring hypotheses to himself. In the meantime there was one simple check which he could easily apply.

Just as they sat down for coffee at an all-night lunch counter, Brown had a sudden thought which filled him with alarm.

"What did you do with the water in the bathtub after I left?"

"Let it down the drain, of course," Crane replied. "What else was there to do?"

"Nothing, I suppose," Brown admitted. "Only I wish you hadn't. It is probably diffusing into the salt water of the bay by now."

"You got a whole bottleful," Crane reminded him. "Wasn't that enough?"

"Plenty," the doctor muttered.

On reaching his house, the doctor carefully packed the bottle of water in his black bag and hurried with it to call on one of his friends, Professor Wilkes, a specialist at the university in the protozoa. Wilkes was one of those fairly venerable scientists who live on the reputations of their prime, do nothing, and look down their noses at younger, more aggressive investigators who accomplish something. His air was that of a once-nimble sand flea soured by experience; his once flaming hair had gone dull reddish streaked with gray, and his lean, angular body was a habitual protest against the radicalism—scientific—of the younger generation. The professor was just sitting down to breakfast when Brown burst in on him.

"Check me up on this, will you?" he began without preliminaries of any kind. "Either I'm losing my mind or this water is alive with microscopic protozoa new to biology. Until last night I wasn't sure of my guess—I searched all the books, but wasn't convinced by not finding any of these described. I might have overlooked known species mentioned only in out-of-the-way papers. Last night settled it. These things *must* be new—to the extent at least of being radical mutations from known species. Their life cycle is entirely different from anything yet described."

With a curious glance at his friend's face, Professor Wilkes abandoned his breakfast, gravely took the bottle of water, and preceded Brown into the study. Having carefully prepared a slide with a drop of the miraculous water, he then applied his eye to the lens and slowly adjusted the focus. For a full minute there was a tense silence, broken only by Brown's unsuccessful efforts to breathe naturally. At last the professor glanced up.

"Are you sure you have brought me the right sample?"

"Positive. Aren't they new species?"

"Look for yourself," the professor invited, rising and making way for his excited friend.

ONE look was enough for Brown. With a short exclamation he straightened up and rubbed his eyes.

"Have I dreamt it all?"

"Probably," Wilkes remarked drily. "Alter the focus to suit yourself. Take a good, steady look."

Brown did so, peering into the tiny speck of moisture which concealed his imagined discovery. In silence he prepared half a dozen slides and subjected them to the same pitiless scrutiny.

"I was mistaken," he grudgingly admitted at last. "That water is completely sterile. Unnaturally sterile," he added after an awkward pause, in which he reddened uncomfortably under the professor's sympathetic regard. "There's not a trace of organic matter in it."

"You boiled it and filtered it through porcelain?" Wilkes suggested kindly.

"If so, I don't recall having done so. In fact, I'm certain I did not."

"Perhaps your protozoa all dissolved of themselves," the professor hinted, with just a trace of sarcasm.

"Could *these* dissolve?" Brown demanded, suddenly exhibiting a sheaf of the drawings he had made.

The professor silently took the sketches and stood shuffling them through his long fingers, occasionally pausing with a faint smile to admire the imaginative beauty of some particularly exotic "animal". Without a word he handed them back. His manner plainly intimated that the interview, so far as it concerned him, was at an end.

"You think I never saw the originals of those?" Brown protested.

"My dear doctor, I think nothing whatever about them. My advice to you is to go home, go to bed, and stay there for a week. You have been over-exerting your mind."

Brown restored the despised sketches to his pocket.

"Would you ask one of your colleagues in the department of chemistry to analyze the water in this bottle if I leave it with you?"

The professor agreed good-naturedly, and Brown left him to finish his belated breakfast. The moment his eccentric visitor was safely down the steps, Wilkes carried the mysterious bottle into the kitchen, thoughtfully extracted the cork, and poured the contents down the sink. Then he threw the bottle into the waste can.

"Mad as a hatter," he remarked. "Poor Brown! It's a blessing he has no wife."

The professor's theory was partly confirmed by an amusing item in the morning paper. This was a hilarious account of the doctor's progress through the city with the voluble Bertha as his only companion. The writer concluded his graphic description with the hint that Doctor Brown, the hard-shelled bachelor, intended his triumphal ride as a gentle hint to the ladies of Seattle that he preferred the company of a fussy hen to their own.

"Mad," the professor repeated to himself. "I'm glad I never consulted him."

Crane was just about to retire after a thorough disinfecting, when the telephone rang. It was Brown.

"We actually did all that last night?" the doctor's perturbed voice inquired.

"I don't know what you mean by 'that', but I can guess. We did, if you have in mind what I have."

"Is it anything about spiders?"

"You might call them that."

"So it was real?"

"Real? I'll say it was. Until you loosen up and explain how it could ever happen, I'm going to think of it as the black widow's revenge. You said it fitted some theory of your own. Come over this afternoon and save my mind. I'll need you."

"Who is going to take care of me?" Brown demanded. "All that we did last night is nothing to what I've just done. I've proved myself a hopeless lunatic to the worst old gossip on the university faculty. It will be all over town by tonight."

Crane chuckled.

"We did such a thorough job in cleaning up that nobody will ever believe a word we say, if we let the least hint escape. You won't catch me letting it out. Better follow my example and sleep it off."

"I will, as soon as I have given Bertha her breakfast. By the way, what is the proper thing to feed a hen in the morning?"

"Spiders."

CHAPTER V

His Joke

FROM the moment the librarian left De Soto alone with the electrical books till eleven o'clock at night, when the closing bell rang, the new man concentrated every ounce of his tremendous vitality on his self-appointed task. Had he been told that human beings—except a few of the most highly gifted—master the printed page a line or a paragraph at a time, he would have laughed incredulously. He himself had "always" digested the information in books by turning their pages as fast as his nimble fingers would let him, and taking in each page at a glance.

The first books, purely descriptive, that he photographed in this manner on his mind, irritated him almost beyond endurance. Why did the writers go to such tedious length to state what was trivially obvious? De Soto began to conceive a mild contempt for the science of electricity as expounded in college texts and popular treatises. In some indefinable way it all seemed an old legend dimly remembered from a forgotten life. The rudimentary knowledge of the universal forces of nature was as instinctive in him as breathing. Had he not 'always' recognized instantly the hidden interplay of natural things as intuitively as he perceived the noonday sun? Why then did these tiresome authors throw up an endless dust of words and irrelevant theories between themselves and the truth of nature that anyone but a blind idiot could apprehend? The amazing speed of his own vital processes made the laboriously acquired knowledge of generations of scientific men seem deadly slow and wilfully blundersome. Why could they not open their eyes and see what lay all about them?

It was only with the thirtieth book hastily sampled that De Soto's naïve conceit received a salutary check. He had just flashed through the massive bulk of Faraday's monumental "Experimental Researches", marveling at the man's painstaking labor to expound the obvious, when he encountered a new language, written in bizarre symbols, of which he could make out nothing. Exasperated by his failure to understand the writer's hieroglyphics, he glanced at the back of the cover to learn the author's name. It was Clark Maxwell, and the title of the treatise was "Electricity and Magnetism, Vol. I." De Soto rose from the table and went in search of the reference librarian. She greeted him at her desk with a welcoming smile.

"Are you finding what you want?"

"Some of it. Can you tell me what language this is?"

She glanced at the beautifully printed page and laughed.

"Higher mathematics, I should judge from its appearance."

"Have you any books on this sort of thing?"

"Several hundred. I'll show you where they are."

She left him to his own devices in a stack of shelf upon shelf of assorted mathematics, from beginners' arithmetics to appalling tomes on mathematical physics that were consulted, on the average, perhaps, once in two years by the patrons of the library.

"Do I have to read all these?" he muttered, turning the diagrammed pages of a descriptive geometry. "More stuff that need never have been printed. Why do they write it? Couldn't an idiot see that this is all so?"

In spite of himself, as he worked his lightning way steadily through modern higher algebra, analytic geometry, the calculus, and the theory of functions of real and complex variables, he began to become interested. Here at last was the simple, adequate language of nature herself. It was terse and luminously expressive in a highly suggestive way—unlike the ton or so of solid prose he had already digested against his will. What the italicized theorems left unsaid frequently expressed more than they purported to tell. De Soto found his own intelligence leaping ahead of the printed formulas, and revelling in the automatic interplay of the concepts their brevity suggested.

Gradually a strange, new light dawned on him. This beautiful language after all was but another shovelful of unnecessary dust thrown up by clumsy workers between themselves and nature. Why go to all this fuss to torture and disguise the obvious? Why not look ahead, and in one swift glance see the beginning and the end of every laborious, unnecessary demonstration, as but different aspects of one self-evident truth? All these imposing regiments of equations and diagrams, that marched and countermarched endlessly through book after book, were merely the fickle mercenaries of men too indolent to win their own battles. By a conscious exercise of its innate power the mind, if only it let itself go, might perceive nature itself and not this pale allegory of halting symbols. Did the writers of scientific books need all these lumbering aids to direct comprehension?

"The world must be full of idiots," De Soto sighed simply, putting back a profound treatise on the partial differential equations of physics. "Has it always been so? I can't seem to remember a time when I didn't know all this stuff by instinct. Still, as I have to live in the world, I must learn to speak its silly language."

There was nothing miraculous about De Soto's performance. A profound physical change in the structure of every cell in his body had accelerated his rate of living—or at least of thinking and perceiving—many thousandfold beyond that of any human being that has yet been evolved. He had not waited for evolution. A million years hence the whole race will no doubt have passed the point which he, by a blundering accident, attained in the billionth of a second. Whether language, mathematical or other, will survive to plague our descendants of the year 1,000,000, is doubtful. These feeble aids will have become as useless as the meaningless magic of our remote ancestors. De Soto was but a partial, accidental anticipation of the more sophisticated and yet more natural race into which time and the secular flux of chance are slowly transforming our kind.

Viewing the vast accumulations of lore which he had absorbed and spontaneously outgrown, De Soto felt old and depressed. What could he do in a world that still tripped itself at every step on its swaddling clothes? Although he did not realize what he was, he felt a chilling sense of poverty and isolation. Sobered in his exultant vitality, he turned slowly back to resume his pursuit of the mysteries of matter. He began where he had left off, with Maxwell's treatise. This was now as childish as the mathematics he had outgrown. Book after book of high speculation and curiously distorted fact passed under his lightning scrutiny, was mastered for what its author intended it to be, and tossed aside.

"Wrong, at bottom, every last one of them," was his somewhat presumptuous verdict as he closed the last, a modern masterpiece on theories of quanta and radiation. "Why will they not see what stares them in the face? The universe lies all about them, everywhere, and like impossible contortionists in an insane circus

they succeeded in turning their back on all quarters of it at once."

It was no harsher a verdict than many a man of science would pass today on the science of the Greeks, or even on that of three centuries ago. Are we as blind as De Soto imagined we are?

"What can I do?" he asked aloud. "If these are the problems they try to solve, how will they ever understand a real one?"

The jangle of the closing bell cut short his gloomy meditations, and he walked slowly out of the building. The crisp night air brought the blood tingling to his cheeks and forehead in a surge of stimulated vitality. Immediately he felt young again, and walked briskly down the brightly lighted boulevard leading to the civic center. The tide of night traffic brought some all but extinct memory of a former existence into momentary life. For one awful second he doubted his identity.

"Who am I?" he gasped, stopping abruptly before the plate glass window of a soda palace. "Am I insane?"

He caught his own reflection in one of the decorative mirrors of the window. It stared back at him, ruddy-lipped, swarthy-skinned, black-eyed and, above all, young with an air of perpetual youth.

"That is not my face," he muttered. "I was never like that. His hair is jet black. Mine is—." He stopped, unable to continue. "That man," he whispered, "is looking back on me from the farthest side of a grave where I was buried a million years ago—or where I am to be buried a million years hence. It is all the same. I am dead and buried, and yet I live."

I

THE 'lost' feeling dispersed as quickly and as mysteriously as it had come. De Soto turned from the window and walked with springy step toward a small park. Although it was now nearly twenty-four hours since he had tasted food, he experienced no hunger. He did, however, feel the need of sleep. Where should he lie down and rest? A glance at the unfathomable vault of the sapphire sky, ablaze with steady stars, convinced him that even the airiest room on such a night would be intolerably stuffy. His problem solved itself. A vacant bench under a fragrant chestnut tree, whose leaves rustled mysteriously in the soft breeze, invited him to rest. In five minutes he was fast asleep. The policeman in the park padded by as noiselessly as a cat, cast the sleeping young man a cynical glance, decided he was broke but sober, and passed on, leaving him in peace.

De Soto slept about four hours, an even, dreamless sleep of complete refreshment. Waking fully and instantly shortly after four o'clock, he felt alive with energy and ready for a long day's work. It was still dark, without a hint of the coming dawn. The library would not open for nearly five hours yet. Suddenly De Soto realized that the library was not his goal, and never would be again. Of what value were all its dusty mountains of dead knowledge? He had mastered the best of its scientific offerings. If the rest—literature, philosophy, and art—was of no greater merit relatively than the cream of the science, it would not interest him. It was not worth inspecting. All of it must be like the science—the first, awkward effort of a race, that had discovered its mind but yesterday, trying to grasp the meaning of life, and failing ludicrously in the attempt. Libraries and all they signified belonged definitely to his irrevocable past—the gray age of a million years ago.

Hunger asserting itself, he rose to seek a clean eating place. He found what he wanted on the cross street opposite the park, a small place, but spotlessly clean.

Only the cook and one waiter were on duty. Neither gave him more than a casual inspection as he entered, for both were servants to the core without one spark of imagination to lighten their completely bovine lives. To such human beings all others appear as listless as themselves. The food was well cooked and neatly served. On these scores there was no complaint. Nevertheless, as De Soto sat sipping his final glass of water, he experienced a vague feeling of discontent. What had aroused his indolent animosity? Chancing to meet the waiter's eyes, he knew. It was the waiter and the cook.

"A pair of mistakes," he thought to himself. "What does either get out of life? They might as well be vegetables. Neither has any interest in his work or in his life. Why don't they do something different? Or why," he thought grimly after a moment's reflection, "don't they hang themselves? The cooks, the waiters, the manager and all at that place yesterday morning were different. They were alive, and enjoyed life—in their own way. But still they were enjoying it. That is the great point. These two are dead and lack the genius to wish they were buried."

Without tipping the moribund waiter, De Soto paid his bill and left the place in disgust. His harsh judgment on the sad-eyed waiter and the harmless, bored cook was of a piece with his estimate of modern physics. They and it were alike useless, both to themselves and to any rational society.

Not only mentally but also physically De Soto was an entirely different being from the stupid, unhealthy Bork in whom he had originated. It is therefore no exaggeration to say that De Soto was only about twenty-four hours old when he left the discouraging cook and waiter, and stepped out into the cool, bracing air of the early morning. In appearance he was a strikingly handsome youth of twenty, with almost a preternatural intelligence shining from his black eyes and glowing from every feature. There was, however, a haunting 'something' about his whole expression which contradicted his vivid youthfulness. An elusive seriousness belied the faintly smiling lips, and a still less tangible shadow of extreme old age lurked behind the light shining from his eyes. It was as if he had seen everything that life on this planet will have to offer for the next ten thousand centuries and, having seen it, was ironically disillusioned by its meaningless futility. Another man having had a similar vision might have been lifted to ecstasy over the lightning progress of the human race; not so De Soto. It was merely a matter of temperament; the dead Bork had not been completely burned out of the living man.

"What shall I do?" he pondered, as his rapid stride hurried him through the darkness. "Is anything worth doing in a world like this? If everything seems stale to me, how can I make it appear fresh and desirable to others? There are too many of them—millions and millions and millions like that cook and waiter. They take everything and give nothing. Give them nothing and they ask for nothing, provided they be permitted to exist. Why permit them?" he continued coldly. Then, after a long blank in which he neither thought nor felt, his lips silently framed the unanswerable question, "Why should any human beings live?" The obvious retort flashed into his mind, "because they can and because they do." That, however, was not an answer to the 'why' as he meant it. His purpose was taking shape. Before many hours he was to decide what he should do with his inexhaustible health and his boundless talent. Rather, the transformed cells of his body were to decide. It was a decision such as our own distant descendants may reach some day—the verdict of an incredibly old and sophisticated man infinitely disillusioned.

He stopped abruptly in his walk, hypnotized by the strange familiarity of a massive, rectangular building,

which loomed up forbiddingly before him in the graying darkness. Where had he seen such a building before? As if threading the shadowy mazes of a previous existence in a dream, he stole toward a sharp oblong of sheer black on the dimly visible wall. The door was open. Before he realized what he was doing, he had entered and turned the switch of the floodlights.

"Where have I seen this place before?" he muttered staring down into the pit of transformers. Another memory struggled up from the wreckage of lost associations, but he could not place it. "There should be twelve lights up there, not only two."

His feet urged him to descend the steel stairway to the pit. The gigantic gray devils towering up on their rigid legs were familiar enough in a subtle way; he had seen pictures of similar monsters in the books at the library. Intuitively and from his comprehensive reading he knew immediately their evil powers and their uses.

"These are unnecessarily big and complicated," he remarked aloud, as if giving his considered estimate to some attentive listener. "Don't you see that you could build a single, compact one to do all that these forty can? All you need—." He launched into a rapid description, bristling with technicalities, of what was necessary for his projected improvements. For an hour and a half he roamed through the laboratory, examining every piece of apparatus, criticizing and contemptuously condemning each in turn. "A hopeless bungle," was his final comment as he ascended the stairs to the gallery of the switches.

Daylight was now streaming coldly in through the open door. De Soto walked to the switch to turn off the lights. The main switchboard controlling the transformers caught his eye, and he noted that the long row of ebonite handles were all down as far as they would go. This was no condition to leave a switchboard in, no matter if it was "dead."

As he opened the switches, his vision included the long bench beneath them. An empty cigar box lay open on the bench. De Soto picked it up, turned it over and over in his hands and finally set it down, his mind vaguely unsatisfied. It recalled nothing to him. Yet he had a chilly feeling that some incident connected with that box had marked the turning point of his life. With a sigh he left the laboratory.

"Where was I born?" he pondered, gazing up at the golden flush which presaged the rising sun. "When? Was it in Buenos Aires, as I told that woman in the library? How strange that I should have forgotten everything of my early life! This is what they call amnesia, I suppose. Well, what does it matter so long as I know who I am now? Yes, I must have forgotten. Let it go."

A neat inscription over the entrance to the building opposite him announced that this was the Erickson Foundation for Electrical Research, and a small tablet on the upper step added Administration Building.

"This is where I intended to ask for work," he remembered, as from a past inconceivably remote. Between this dawning day and its yesterday, when he had scanned almost in a glance the sum total of existing physical knowledge, lay an eternity in his maturing mind. The twenty-four hours had aged him so that he looked back on his yesterday's ambition as the uninformed dream of an eager child. Although he knew better now than to pursue his childish purpose—whatever it may have been—he adhered to his plan of working at the Foundation. Already his initial intention was more than half forgotten; his new purpose, he thought, would at least help him to pass the time.

No sooner was this resolve formulated than a queer echo made itself heard from the deepest recesses of his mind. "Will you pass the time," the doubter whispered, "or will the time pass you?" For a moment a chill conviction seized him that both possibilities suggested by his subconscious mind were to be fulfilled to the last letter, and that he was merely a helpless drifter on a black ocean without shore or tide. He quickened his pace to ward off the fingering chill that pattered over his whole body, determined to lose himself in vigorous exercise until he could call upon the director and ask for work.

WHILE De Soto was walking off his depression, Brown was endeavoring to sleep. All he achieved was a fitful nightmare till about ten o'clock in the morning. Giving up the attempt, he rose and made a deliberate effort to resume his normal habits. This morning should be like any other of his orderly life. He bathed, shaved and rang for the housekeeper to order breakfast. The doctor was an early riser—when he had not been up all night—and his first two hours out of bed were his time for loafing. No man, he was wont to assert, could hope to wake up fully in less than two hours. His period of relaxation was not wholly wasted, however, for he usually managed to read at least one article in the current scientific journals before going to work. For the moment he was determined to forget his nightmare in the laboratory and his own vanishing protozoa.

The morning paper was rather duller than usual, and Brown was just about to discard it in favor of the "Biological Review," when an unobtrusive paragraph on the last page caught his eye. "Fishermen report strange malady," the caption ran. The fish, Brown learned on reading the article, not the fishermen, were the sufferers. Moreover, only salt water fish were affected. The disease manifested itself in discolored blotches of all hues—blue, green, yellow, purple and red—on the skin and fins. The flesh seemed as firm and sound as ever. Probably, the report stated, the discolorations were harmless.

"Perhaps," Brown agreed, cutting out the paragraph. "More probably they are not. This must be looked into by the Board of Health. If the fish trust thinks it can get away with anything like this, it is badly mistaken. That story should have been printed on the front page."

A short conversation over the telephone set the appropriate machinery into instant motion. The Chief of Health promised to send out his squads at once to seize and destroy all spotted fish exposed for sale.

"That settles that," Brown remarked, picking up the "Biological Review." But was it settled? Only salt water fish were being affected. The doctor meditatively extracted the sketches of his despised protozoa from an inner pocket and stood thoughtfully regarding them. "Are they as mad as the professor thought? What if they are? Discoveries aren't made by 'safety first.' I'm going to do that experiment the minute Crane gets his twenty million tube built and going." He rang for the housekeeper.

"Will you make it part of your work," he requested the capable woman who responded, "to see that Bertha is well taken care of? It may be weeks until I have any use for her, but in the meantime I want her to hatch all the eggs she lays."

The housekeeper put a broad hand over her mouth and turned aside. When she recovered her composure, she ventured a practical suggestion.

"You might get Bertha a husband, if you want her eggs to hatch."

"Of course," the doctor agreed hastily. "Will you see to it?"

When she had retired out of earshot, Brown called up Crane's apartment.

"Hullo, Crane? Could you sleep? No more could I. How is your skin this morning?"

"Practically better. I can't understand——"

"Neither can I, yet. But I'm getting warm. Have a look at the last page of this morning's *Sun*. There's an interesting article on fish. By the way, when you take a bath hereafter, sterilize the water as well as you can before letting it down the drain. Better get a liberal supply of cyanide of mercury and put about a tumberful into the tub when you are through."

"What for?"

"General precaution. That amount won't do any harm by the time it reaches the sea, and it may prevent a world of mischief before it gets there."

"Am I dangerously infected?"

"Probably not, in any mundane way. That's what makes you so interesting. Going to start work on your new tube this morning?"

"Yes, as soon as I have broken the news to Kent that he must spend about ten thousand dollars putting the transformers right again. Friend Bork did a rare job as his parting shot. I was just going down to the laboratory when you called up. By the way, never tell a soul about last night. I'm beginning to believe it never happened."

"I'm not advertising. If anything interesting happens, let me know."

On reaching Kent's outer office, Crane was greeted with ominous formality by the secretary.

"Will you take a seat, Doctor Crane," she said, "until Mr. Kent is ready to see you? He was about to send for you."

"Who's dead now?" Crane inquired flippantly.

The secretary ignored Crane's levity and merely stated that the director was "in conference" with the trustees.

"I guess I'm fired," Crane remarked to the ceiling. "If so, will you please tell Mr. Kent that I resigned last night?"

As the secretary deigned no reply, Crane moodily sat down and lost himself in brooding. The spectacular damage to the transformers, he guessed, was the inspiration of Kent's untimely session with the trustees. They would naturally blame him for having left the door unlocked. Well, he could not prove that he hadn't. Let them do what they liked; he didn't give a damn. In spite of his assumed indifference Crane realized that a dishonorable discharge from the Foundation would cut pretty deeply into his self-respect. Moreover, now that he was about to be fired—as he imagined—he suddenly conceived a warm affection for the Foundation and for every member of its staff, except of course Kent. A resonant voice asking for an appointment with the director caused him to look up.

The secretary was staring in fascination at the dark, intelligent face of the man addressing her, unable, apparently, to follow his question. Like the librarian she was wondering where she had seen this striking man before, although she was in her early twenties with no disastrous love affairs in her past.

"Will you please make an appointment for me with the director?" that elusively musical voice repeated.

"As soon as Mr. Kent is free," she murmured, "I know he will be delighted to see you, Mr.——"

"De Soto."

"Will you wait here? Mr. Kent is in conference."

"Must I wait? I should prefer to see him at once, as I have a full day ahead."

"I'll see," she volunteered. Then it occurred to her that she did not know the young man's mission.

"Mr. Kent will ask me your business." She all but apologized for the indelicacy.

De Soto unfolded a morning extra and indicated the joyous headline: "ERICKSON LABORATORY DESTROYED." Of course the laboratory was not destroyed; the giant transformers only were disabled. To have stated so in cold print would have killed the story. On this occasion neither the director nor the trustees were reluctant to confide their misfortune to the press. The janitor early discovered the open door; a short investigation by members of the staff, summoned from the workshops, disclosed the extent of the damage. Too obviously it was the work of an enemy from the inside. Kent, at the moment of De Soto's appearance, was endeavoring to convince the trustees that Crane was guilty.

"He practically told me to go to hell," he vociferated. "And he said he cared nothing for what he called his 'silly job.' "

"Why not ask your secretary to call him, Mr. Kent, and ask him whether he did it?"

Kent was game. He pressed a button. The buzzer called just as De Soto unfolded the extra for the secretary's gaze.

"I have called about the damage to the transformers," he explained. "Please tell Mr. Kent that."

"I will," she promised, and hastened to answer the insistent buzzer.

ALL the time that De Soto stood parleying with the secretary, Crane studied him minutely. By one of those common but unaccountable quirks of human nature that often mystify us, he took an immediate and violent dislike to the swarthy young man with the peculiar voice. Possibly Crane's own frigid reception by the secretary, contrasted with De Soto's, may have touched the hair trigger of his masculine jealousy and self-love, although the secretary was nothing to him. Ordinarily he treated her as a pretty piece of furniture. Whatever the cause of Crane's instinctive dislike, the feeling itself was not to be denied. That it was primitive and irrational but made it more significant. Crane followed the young man's every movement and listened avidly to every changing inflection of his voice. Had he been capable of self-analysis he would have summed up his conclusions somewhat thus: "That young man impresses me as a thoroughly bad egg. I'm going to watch him."

When De Soto asserted that he had called about the damage to the transformers, Crane's curiosity naturally was aroused to the point of acute physical discomfort. Left alone for a few minutes with the young man, Crane decided to break the ice.

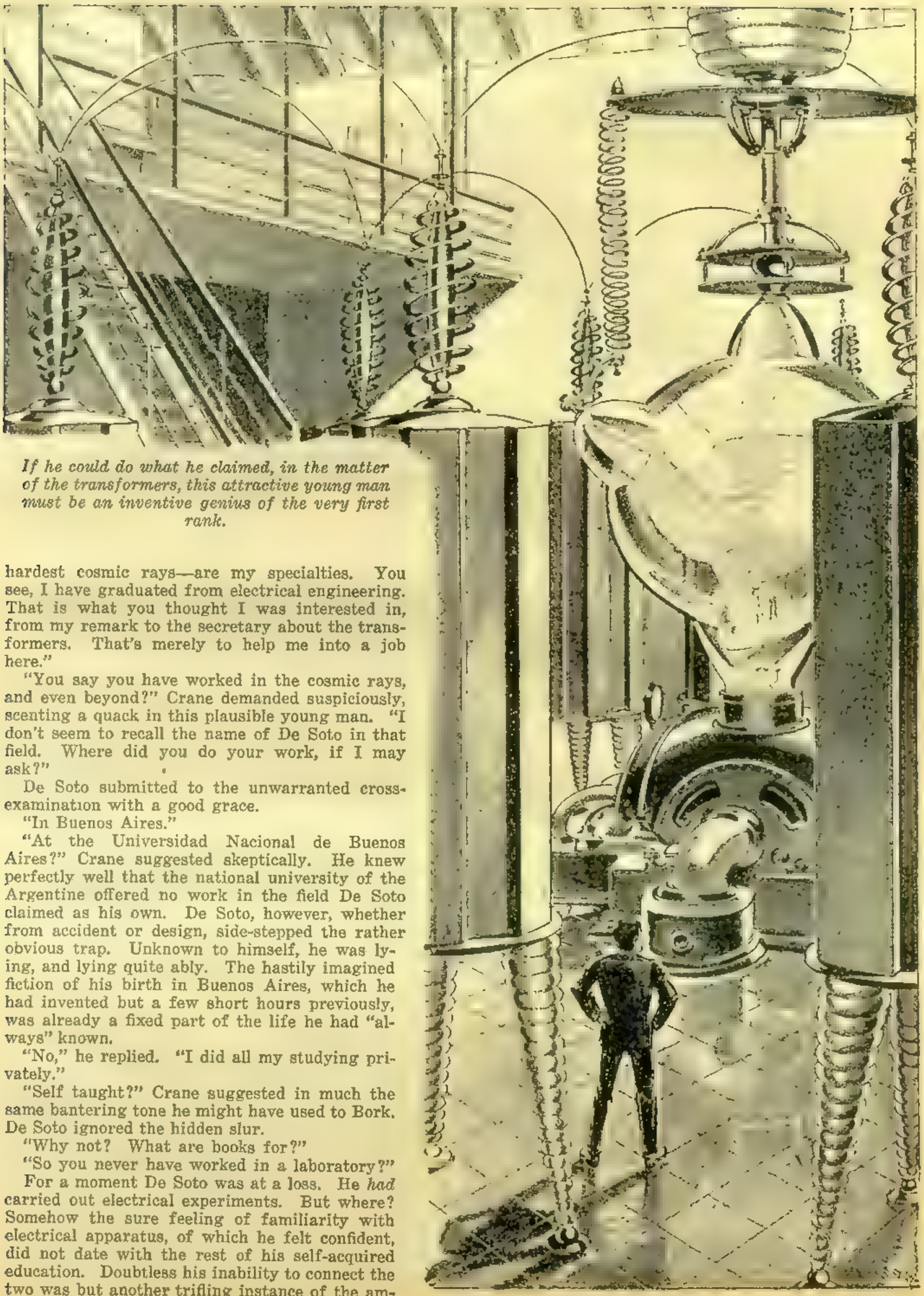
"You are an electrician?" he demanded of De Soto's back.

De Soto wheeled about sharply and found himself looking up at a rather grim, square-jawed face on which more than a hint of hostility showed. Before he knew what he was doing, De Soto found himself rocking in uncontrollable laughter. Do what he would to stop his rude mirth, he failed. What was the joke? Why did the man's face awaken the haunting sense of the ironically ridiculous? No ghost of a memory whispered to remind De Soto of his past. Yet, what he planned to do with his unbounded talents for the good of humanity seemed irresistibly ludicrous, and the humor of the situation was focussed in some mysterious way on the disconcerted face looking down into his own. Crane stood it as long as he could.

"If you'll tell me what's funny, I'll laugh too. Go on; don't mind me."

De Soto gulped and subsided—outwardly.

"I was laughing at you taking me for an electrician," he explained glibly. "In a way I am, although radiations of the shortest wavelengths—ultra violet, X-rays, gamma rays, and so on, clear into the region of the



If he could do what he claimed, in the matter of the transformers, this attractive young man must be an inventive genius of the very first rank.

hardest cosmic rays—are my specialties. You see, I have graduated from electrical engineering. That is what you thought I was interested in, from my remark to the secretary about the transformers. That's merely to help me into a job here."

"You say you have worked in the cosmic rays, and even beyond?" Crane demanded suspiciously, scenting a quack in this plausible young man. "I don't seem to recall the name of De Soto in that field. Where did you do your work, if I may ask?"

De Soto submitted to the unwarranted cross-examination with a good grace.

"In Buenos Aires."

"At the Universidad Nacional de Buenos Aires?" Crane suggested skeptically. He knew perfectly well that the national university of the Argentine offered no work in the field De Soto claimed as his own. De Soto, however, whether from accident or design, side-stepped the rather obvious trap. Unknown to himself, he was lying, and lying quite ably. The hastily imagined fiction of his birth in Buenos Aires, which he had invented but a few short hours previously, was already a fixed part of the life he had "always" known.

"No," he replied. "I did all my studying privately."

"Self taught?" Crane suggested in much the same bantering tone he might have used to Bork. De Soto ignored the hidden slur.

"Why not? What are books for?"

"So you never have worked in a laboratory?"

For a moment De Soto was at a loss. He *had* carried out electrical experiments. But where? Somehow the sure feeling of familiarity with electrical apparatus, of which he felt confident, did not date with the rest of his self-acquired education. Doubtless his inability to connect the two was but another trifling instance of the amnesia from which he seemed to suffer. Trust-

ing that he was telling the truth, he gave what appeared to him at the moment as the only reasonable answer.

"I had a small laboratory of my own."

Crane received this in silence. Further cross-examination was postponed by the return of the secretary. She had been urging De Soto's priority over Crane's in the matter of an interview with Kent and the trustees.

"Mr. Kent will see you now," she announced, nodding to De Soto.

Followed by the suspicious eyes of Crane, De Soto disappeared into the inner sanctum. Crane favored the secretary with a sour look and resumed his chair. Whether they fired him or not, he was not going to leave until he learned De Soto's object.

Once in the director's sanctum, De Soto found himself the mark for seven pairs of questioning eyes. Kent rose from his seat at the end of the long table, his hand extended in formal welcome, while the six trustees turned in their chairs to get a better look at the newcomer.

"You are from the press, Mr. De Soto?" Kent inquired.

"No," De Soto laughed. "I came about this." He tapped the article about the damaged transformers. "The papers say there is a hundred thousand dollars worth of mischief done."

"Exaggerated," one of the trustees interrupted. "Ten thousand will cover it."

"What I propose is this," De Soto continued, acknowledging the trustee's remark with a slight nod. "For not more than a total outlay of five thousand dollars you can duplicate your whole battery of transformers. Now, this is what I suggest. Spend five thousand dollars, and I will show you how to do everything your high tension laboratory ever did, or ever could do—provided you were to repair the damage. Moreover, the entire apparatus will not exceed a cubic yard in bulk."

Kent glanced at the trustees with a wan smile. His irreproachable secretary, departing from her habitual caution, had admitted an impossible crank to disrupt a most important conference. The quality of Kent's smile slowly changed.. It became puzzled. Why, precisely, had he and the trustees listened so attentively to this swarthy young man's preposterous claims? A trustee cut the knot.

"Can you make good on what you propose?" In spite of his shrewd business sense he was strongly attracted by this magnetic young fellow's personality and the strangely luminous, rational glow of his eyes. "If you are not talking nonsense, you should be able to convince experts. Want the chance?"

"Experts such as you have," De Soto replied with truth but unintentional rudeness, "probably wouldn't understand my plans. However, if you wish, I will try to explain."

"Ring for Doctor Crane," the trustee snapped. "I believe Mr. De Soto knows what he is talking about."

At the mention of Crane's name, De Soto controlled a strong impulse to laugh. When Crane entered, glum as a naughty boy expecting a reprimand, De Soto turned his back on him. All through the ensuing discussion the man who had been Bork never once looked his former chief in the face. Some uneradicated instinct held him back, although consciously he had not the shadow of a memory of his former enemy and would-be friend.

THE lively talk began with a trustee's suspicious questioning of De Soto regarding the young man's scientific training. De Soto repeated smoothly what he had already palmed off on Crane, adding several circumstantial details. The story, strange as it seemed, hung together. The trustee, unconvinced, let it pass at its face value. After all, what did it matter who or what the man was, provided he concealed an inexhaustible mine of diamonds under his thick black hair? If he could do what he claimed in the matter of the transformers, this attractive young man must be an inventive genius of the very first rank. At the rate of one dollar apiece for all patents taken out while a member of the staff, De Soto might well be worth several hundred million dollars to the Erickson Foundation before his contract expired. The worldly wise trustee was already rehearsing the terms of the ten-year contract which would sew up De Soto tighter than any dead sailor about to be slipped overboard ever was.

From personalities the discussion soon launched into a bewildering debate of technicalities between De Soto and Crane on the design of high tension apparatus, the construction of more efficient insulators, thinner than the thinnest tissue paper and, most important of all, an entirely novel process for attaining a perfect vacuum. Even to the untechnical trustees and the unscientific director it was evident that the best of the argument was De Soto's from start to finish. As Crane interposed one objection after another, only to have each demolished in turn by a short sentence backed up by a shorter mental calculation, De Soto began to lose patienee with the slowness of the expert mind. Finally, turning to the director in exasperation, he asked whether there was one—only one—competent physicist in the Foundation. Kent silently pressed a button. To the worshiping secretary he explained that Mr. De Soto wished to confer with Doctors So-and-So, naming the cream of the specialists enslaved to the Foundation.

They dribbled in by twos and threes, until a full dozen found themselves involved in the most terrific battle of their distinguished scientific careers. By ones and twos they were eliminated temporarily by hard facts or harder formulas hurled at their heads, only to rally for the next attack and be again knocked flat. Whether De Soto was right on his new theories, or on his novel project as a whole, was beyond their powers to decide. There was no doubt, however, that he had all the classical theories and current experiments—old stuff, in his contemptuous phrase—at his finger tips. Lunch time had passed long since; the dinner hour came and went unnoticed, and still the battle raged. At last, shortly before midnight, De Soto had sunk his last opponent. On many of the details of his project they were still unconvinced, but they had shot their last round.

The signing of the contract followed as a matter of course. Departing from their invariable custom, the trustees guaranteed to De Soto royalties of one per cent on all inventions patented by him while a member of the staff, in addition to the usual legal dollar. Argument with such a man might prove more costly in the end than graceful submission. They gave in before he could have a chance of offering his talents to some less greedy competitor.

While De Soto was affixing his signature—Miguel De Soto—to the contract, Kent buttonholed the President of the Board, and poisoned that potentate's mind against the defenseless Crane. All of Crane's flippancy in the face of duty, his flagrant disrespect for decent authority, and finally his heinous offense in leaving the door of the high voltage laboratory open, and so causing thousands of dollars worth of damage, were poured into the President's exhausted ear.

"You want me to ask for his resignation?" the President suggested. "Is that what you're driving at? Give the word, and I'll do it. We have just taken on Mr. De Soto at ten thousand a year *plus* those robbing royalties. Why not save Crane's salary? He's of no further use to us that I can see. Mr. De Soto's field includes

Crane's, I gather?" Kent nodded. "Then say the word, and I'll give Doctor Crane his walking papers."

"It might cause criticism if it got out," the cautious Kent demurred. He saw his chance of sticking his longest knife into Crane, and he determined to seize it. In fact, he had worked on the President with just this purpose in view. "Why not cause him to resign voluntarily?"

The President all but grinned. "How?"

"Tell him that henceforth he is to act as Mr. De Soto's assistant. Say that we all know how proud he will be to work for so great a scientist as this extraordinary young man has proved himself to be. Don't mention a word about salary. Put it on the purely scientific plane of service."

"Leave it to me."

De Soto stood talking to three of the trustees as the President descended upon Crane. Speaking in a loud voice so that none of the technical staff present should miss the obvious moral, the President delivered his honeyed ultimatum. The faces of the twelve men of the staff went blank; those of the trustees beamed. Here was Crane's chance to show his mettle. The technical experts prepared to offer their own resignations the instant Crane refused the insulting offer; the trustees wondered whose fertile mind had conceived this neat method of firing a faithful employee whose services were no longer as profitable as they had been. Crane's immediate response took all parties completely aback.

"Thank you, Mr. President," he replied gravely. "I shall be honored to serve as Mr. De Soto's technical assistant. And I shall never forget your generosity in giving me this opportunity of showing my loyalty to the Foundation and to Science."

Kent's jaw dropped. Crane's rounded speech of acceptance was a first class imitation of what his own might have been under similar circumstances. What did that long, lean devil of a Texan mean by it? Was he forcing them to fire him outright, like men? Well, they weren't such fools. They would put no shovel in his hand to fling mud at the Foundation. So much for Kent. The President shot him a spiteful glance as if to say, "You've made a fool of me. Two can play that trick, as you will find out before long." The members of the staff looked anywhere but at Crane. They would have backed him up to a man. Who would have suspected him of having a yellow streak? So much for Crane's former friends. De Soto extended his hand in friendly congratulation. Crane shook it vigorously. So much for the conventionalities.

What of Crane? He meant every word he said. That he had phrased his acceptance in fatter rhetoric than he usually fancied was merely the luxury he allowed himself of insulting Kent before the trustees. Crane knew exactly what Kent was trying to do, and he dared his petty tyrant to do it like a man. As for the coldness of his scientific friends, he felt that he could endure it as long as they. It was of no great moment. The one thing that sustained him was his instinct that De Soto was evil to the core, with a black, new evil, venomous beyond human experience. Did not any of the others feel what he sensed with every nerve of his body? No, he admitted; they probably did not. The trustees were blinded by the profitable bargain they had just driven with the new man, the technical experts by his scientific brilliance. All, Crane felt, might more sensibly have sold themselves for thirty cents to the devil. Their gain was a fool's. Although he had no definite feeling as to the precise way in which De Soto was a thing of evil, Crane knew that his silent estimate was just. Until he or the Foundation went under, he would stick by the ship and save all he might. His motive was not love for a corporation which had treated him scurvily, but intense dislike, amounting almost to hate, for the dark young man with the piercing eyes who henceforth was to be his driver.

On passing into the outer office, they found Alice waiting to drive her poor, tired father home. Kent seized the opportunity of further humiliating Crane by presenting De Soto to his daughter with a great show of arch-fatherly effusiveness. Crane observed the comedy, nodded curtly to Alice, and strode out of the building. To overtake his departing enemy with a last barbed dart, Kent raised his voice and insisted that De Soto be his guest for a few days, until he found comfortable quarters near the Foundation.

Two minutes later Kent's car overtook Crane. Alice was driving; Kent was spread out on the back seat. De Soto, sitting up in front by Alice, seemed to be progressing rapidly with the director's daughter.

"That fool!" Crane muttered. "Can't he see what De Soto is? I don't mind being snubbed. But it is a bit thick when he uses Alice to do his dirty work. Well, if she is that kind, I'm not a sentimental sap. She can go to ——."

An hour later, De Soto stood as still as a rock on the cork mat of the bathroom in Kent's guest suite, staring with unseeing eyes into the mirror. He had just enjoyed a luxurious bath. The director had kindly lent him a suit of pyjamas, smelling faintly of lavender, and a soft shirt and socks of his own for morning. De Soto had explained that his things were in his room at a distant hotel. In the morning he would lay in a complete outfit. For the moment he was lost in thought, or rather in an ecstasy of pure existence which was neither thought nor sensation. The warm bath had stimulated his circulation, and he was, for the time being, a perfect animal and nothing more. No spark of human intelligence kindled the black eyes staring into his own from the plateglass mirror.

Presently he sighed. Realization of his circumstances and of what he had accomplished during the past twenty hours overwhelmed him like a whirlwind of fire. The eyes in the mirror leapt into life, flaming up from the dead blackness of incredible age to the piercing gaze of intelligence incarnate in perpetual youth. His purpose came back to him. No longer merely a faultless animal, he had remembered his humanity and all that he intended for his fellow human beings. He remembered also the trustees and the director, and the bargain they had driven with him. For an instant his face clouded with fierce scorn. Then he began to shake with silent mirth. His secret joke, multiplied a billionfold, had returned to comfort him.

"Millions and millions and millions of them," he thought, "like that cook and waiter, and millions more like Crane, those trustees, that director, and his daughter."

Still shaking with suppressed laughter he stole into the bedroom as noiselessly as a tiger and went to bed.

CHAPTER VI

Discharged

SIX months after he began work at the Foundation, De Soto found himself world-famous. Although he never read a newspaper, he could scarcely avoid seeing his name at least once a week in the headlines as he passed the newsstands. He had out-edisoned Edison and out-invented all the electrical inventors of the past seventy-five years—according to the press. Remembering that the papers made a hundred thousand dollars worth of damage out of a paltry ten thousand in the matter of the transformers, we may safely discount these early reports to about ten per cent of their

face value. When, some months later, De Soto began doing things of greater significance for humanity—things that could not be evaluated in terms of dollars and cents—the press was dumb, and for a sufficient reason. As long as the new so-called luxuries and conveniences of living which De Soto created, seemingly in his sleep, inspired the journalistic tongue, reporters and editors were on familiar ground. But when De Soto, tired of playing Aladdin's lamp to millions who rubbed him the wrong way, turned to the higher and more difficult parts of invention, the world simply did not realize what was happening to it.

De Soto's masterpiece was new in human history. To find its peer we should probably have to go back at least as far as the beginning of geologic time. The human race, in De Soto's vaster enterprises, was merely a rather minor indiscretion on the part of mother nature. But for the first six months of his dazzling career as the king of inventors, Miguel De Soto lived up as best he could to what, he sensed, a somewhat pampered world expects from its geniuses. They asked him for bread and he gave them cake. The necessary physic after such a debauch of sweet stuff was to come later, when they were surfeited.

In extenuation of his subsequent career, it should be remembered that De Soto suffered from a blind spot in his mental vision. Like many men of great talents he at first had mistakenly believed that the world sincerely wished to better itself. If so, why shouldn't it be eager to reach the best possible state in one quick stride, instead of blundering this way and that like a drunken imbecile, and getting nowhere in a thousand years? De Soto here made the usual mistake of the super-intelligent in thinking that his own clear vision would satisfy the blind.

The first six months at the Foundation passed like a Persian dream before the half closed eyes of the purring trustees. Without the least suspicion that their brilliant young employee was feeding them all this unnecessary wealth for purposes of his own, they squatted like drowsy bullfrogs on a warm summer day in their golden swamp, expanding their already enormous business and swelling to the bursting point with financial pride. The fatter they grew the faster they bloated. But De Soto, like the true artist he was, deferred the adroit pin prick which would deflate them all, until power had become a fixed habit with them and inordinate expenditure their means of keeping alive.

One example of De Soto's methods will suffice. It is already a classic the world over, but its retelling here may throw some light on his general campaign, which even now is not well understood outside of a very narrow circle. His first great financial triumph was a mere byproduct of his toy transformer and storage battery—the project which got him his appointment to the staff of the Foundation. He had undertaken to emprison twenty million volts in a small box, and to control his trapped devil in any way the trustees desired. In short, he promised to put the elaborate twenty million-volt laboratory, and all of its rivals, completely out of business, and to do it for an expenditure not exceeding five thousand dollars. When the trustees remembered that their high tension laboratory had cost close on three million dollars, they saw the most obvious commercial possibilities in a flash. Although there was as yet no practical use for such a devil box as De Soto promised to deliver—unless the military and naval authorities might be tempted to flirt with it—the trustees had faith enough in pure science to believe that somehow, some day, the dollars would gush out of that evil box. Some young man as brilliant in a practical way as De Soto seemed to be scientifically would come along like Moses with the right kind of stick in his hand. Then, with one resounding smack, he would smite the useless black box, crack it wide open, and let the golden deluge drown the trustees in dividends.

DE SOTO did not wait for a greater than he to enrich the Foundation beyond its thirstiest dreams. He did it himself, almost in his sleep. One detail must be settled before the box itself could be constructed. This was a revision of the whole theory and practice of insulation. The huge strings of earthenware mushrooms that made the long distance transmission of high voltage possible obviously would not do. The high tension lines from the mountains to the cities carried but a paltry two or three hundred thousand volts; De Soto must handle twenty million. To insulate against such a pressure with glazed earthenware, or with any of the known substitutes, would require a mass of dead material equivalent to several hundred times the small box into which De Soto planned to compress his entire apparatus, insulation, transformers and all.

Following a hint he had absorbed in his exhaustive reading, he saw that the true way out of the difficulty was not the building of more and more massive resistances of earthenware and the rest, but the practical construction of material films thinner than the most tenuous soap bubbles. These must be manufactured cheaply and deposited directly on the wire carrying the high current as an invisible sheath not over a few atoms in thickness—the thinner the better. With Crane's help, De Soto had perfected the working drawings and specifications of the process three days after he joined the Foundation. The plans were turned over to the technical staff for practical development, and in two weeks the Foundation had staked out its first El Dorado.

To their surprise, the trustees discovered that De Soto was an adept in the finesse of service as understood by them. It was his campaign that they launched against their innocent competitors. The Klickitat Lake Municipal Power Company, having just completed its giant power plants in the Cascades, was calling for bids on the insulation of its three hundred thousand-volt trunk line. De Soto saw the Foundation's great opportunity and, incidentally, his own. The Power Company belonged to the people of Seattle. It was a public enterprise, supported entirely by taxes. By eliminating dividends to stockholders, the public hoped to obtain its power and light at a cost much below the current rates. Why not, De Soto suggested to the trustees, donate the required insulation to the public? The trustees saw the light and smothered their indecorous grins. By presenting the public with a few thousand dollars worth of the new insulated wire, and saving the oppressed taxpayers several hundred thousand, the Foundation would net an incalculable amount of free advertising and the good will of the people.

The engineers of the Municipal Power Company came, saw a four days' demonstration, and were conquered. High steel towers, tons of insulation, and expensive copper cables were all replaceable by a thin wire sheathed in the new film and suspended from trees, telephone poles or broomsticks as convenient. In the words of their chief, it was a knock-out. It was. In five weeks the Erickson Foundation had a monopoly on insulation the world over, and one great corporation after another, from San Francisco to New York, from Manchester to Brussels, went flat.

This was but the beginning. De Soto, with Mephistophelean ingenuity, talked the not ungenerous trustees into trebling the price of the new, simple insulation the moment their strongest competitor collapsed. Having created a new necessity of modern life, the Foundation had the electrical industry at its mercy. To their credit

it should be recorded that the trustees did not yield without a short struggle to De Soto's cynical importunities. Their profits already were outrageous; why make them sheerly indecent? De Soto could have enlightened them in one sentence, had he felt inclined. But the time for the dazzling revelations of the surpassing splendor which was to burst upon the trustees was not yet ripe; first they must be educated. They could not withstand this frank young man's magnetic charm. One and all they agreed that he was irresistible. He was.

All that De Soto asked in addition to his modest salary and rapidly mounting royalties was the time occasionally to undertake a piece of pure, unpractical research. As these short excursions into science for its own sake always resulted in some radical improvement of existing luxuries that sent whole businesses to the wall, the trustees humored him. There was the little matter of high vacua, for example. De Soto begged for a ten days' holiday in which he began his explorations of the hardest cosmic rays. First he must obtain a practically perfect vacuum. The so-called vacua of hard X-ray technique, where billions of molecules of gas remain in each cubic inch after the diffusion pump has done its utmost, were of no use in his project. He needed a tube from which all but a hundred or two of the ultimate particles of matter have been withdrawn. Again Crane and other members of the staff helped him with the mechanical details, and again he triumphed completely.

As a byproduct he revolutionized the industry of making electric light globes and radio tubes, cutting down the cost of exhausting these to a fraction of a per cent of what it had been. The trustees beamed on him, and told him to take a year's vacation if he wished. With a subtle smile, which they failed to interpret correctly, he refused. Later, he said, he would take a real holiday. They thought he was merely modest in a decent, humble way, like all good scientists—of their rather uninstructed imaginations. De Soto had a withering contempt for science and all its works as evidenced by the age in which he was condemned to live and be bored. But his frank geniality would have blinded almost anyone to the smouldering volcano which it concealed.

In addition to the commercial byproducts of his earlier genius, another, of a purely social character, was to have far-reaching consequences for himself. Partly to spite Crane, and partly because he had no insight into the more morbid aspects of human character, Kent insisted that De Soto occupy the guest suite in his house indefinitely. De Soto consented, chiefly because he disliked the bother of hunting up suitable quarters for himself. He breakfasted with Kent and Alice, but took his other meals out, except for an occasional festive dinner in honor of some new triumph of his commercialized genius. The inevitable happened. Alice fell hopelessly, degradingly in love with him. Before the irresistible charm of his resonant voice, his perpetual high spirits—they seemed high to her—and his vibrant vitality, she abased herself utterly. His careless words of greeting became her treasured pearls of seraphic wisdom and celestial love. She is not to be unduly censured for her blindness; De Soto might have had any girl he fancied for the trouble of asking. But he never bothered to ask. He saw what had happened to Alice and it did not even amuse him. Nor did it move him to intercede in behalf of her father when the lightning struck him.

The President of the Board of Trustees was blessed with a long and accurate memory. His spite against Crane evaporated and condensed on the hapless director. Kent, he remembered, had proposed the plan for forcing Crane to resign. It had resulted in making the President feel foolish—a disagreeable sensation to any self-respecting man. Accordingly, when De Soto began conquering the electrical industry, the President decided that Kent was no longer necessary to the prosperity of the Erickson Foundation.

"How would you like to be director?" he jovially inquired of De Soto on the morning of exactly the hundred and eightieth day of De Soto's contract.

"How about Mr. Kent? What will he do?"

"Go fishing," the President hazarded with a slow smile of doubtful sincerity. "You see eye to eye with me in this matter," he continued, and De Soto did not deny the allegation. "Mr. Kent is no longer necessary to us. What do the trumpery eight or ten millions a year that he begs from old paupers amount to, anyway? The royalties from your new oil switch alone—the cheapest thing you've done—make all that Kent brings in look like a Mexican dollar. You take hold of things and show the world what a real, up-to-date business administration is. Accept now. There's a good fellow."

De Soto lazily stretched his arms and yawned.

"All right. I'll quadruple your profits in a week."

The President was about to shake the new director warmly by the hand when the latter, for no apparent reason, doubled up in an uncontrollable spasm of laughter. Thinking De Soto was enjoying the joke on Kent, the President joined in the whole-souled shout. The harder he laughed the worse De Soto became. At last, after a severe tussle, the swarthy young man gained control of himself and stood gazing with humid eyes at the President.

"This is rich," he gasped. "You will tell him, of course?"

The President nodded, and De Soto went soberly to the workshops to supervise the construction of the last unit of his cosmic ray generator. That afternoon Kent broke the news to Alice.

"I have saved practically nothing," he confessed bitterly. "Well, I can peddle life insurance till some place offers me a position. We shall have to vacate this residence within a month. It will be De Soto's now. He's director; I'm down and out."

"Perhaps he will ask us to stay here until we get settled," Alice suggested, a sinking at her heart.

"Impossible! To accept hospitality from a man who has stabbed me in the back? Never!"

But he did, that very evening, when De Soto, in response to a humble hint from Alice, indifferently invited Kent and his daughter to stay as long as they liked. They were to manage the house; he would pay the expenses. Things were to go on precisely as before. De Soto did not care whether they stayed or went, and the considerable expense of keeping up the establishment would not make even a dent in his weekly royalties. Should the Kents finally decide to leave, he would have a housekeeper. All he asked was that he be spared the bother of settling down to a new regime.

The morning after the disaster, Alice rose much earlier than usual and waylaid the generous protector of the poor before he entered the breakfast room. The utter self-abasement of her thanks seemed to rouse De Soto's smouldering contempt.

"Are you a human being?" he demanded roughly.

She failed to comprehend the blasting sarcasm of his brutal question.

"Of course," she laughed.

"Well, then—" he began and stopped abruptly. A brilliant idea for an experiment had just flashed into his mind. His harsh tone softened, and he laughed in the mellow way that he knew was music to the deluded girl's soul.

"What I was going to remark," he continued, "was

simply this. You are human; so am I. All that I have done for you is nothing. Nothing!" he repeated with furious emphasis. "If human beings can't do so little as nothing for one another, and not have to be thanked for it, they are no better than hogs. Or," he added after a reflective pause, "than a certain cook and waiter I saw about six months ago. So please never refer to this matter again. Stay here as long as you and your father wish and let things go on exactly as they did before. I'm comfortable; why shouldn't you be?"

His generous words, whose acid sting she missed completely, turned her blind love to dumb adoration. She was his whenever he wanted her. But he did not want her—yet. First he must perfect his generator.

ALL through the spectacular months of De Soto's rocket rise to world fame, Crane served his superior as faithfully as he could in the tasks that fell his way. Without the slightest twinge of jealousy, professional or personal, Crane admitted that De Soto's mind soared above his own a universe away. The young man never seemed to think out his problems or to reason painfully from one verified guess to the next, as even the greatest scientists do, except in their two or three flashes of blinding genius. The beginning and the end were alike to him; the beginning was the wish to accomplish some bold project, the end its accomplishment. De Soto's method was like a continuous streak of lightning. For all that Crane could see, nature offered no puzzle more perplexing to De Soto's easy skill than breathing is to a normal man. Thus far Crane was one with the rest of the staff. Where he parted company with them was deep down in his secret thoughts.

Crane's first impression of De Soto remained as vivid as ever. Outwardly the two men were on the friendliest terms. What the young king of all inventors thought of his technical assistant he kept to himself; Crane's opinion of his chief was too dangerous to be shared with the rest of the staff. Brown was his one confidant. Their common nightmare with the black widows in the laboratory had established a bond between the two that nothing could break. They seldom referred to their unnatural adventure, but both knew that it was at the bottom of their unreserved friendship. Nor did Crane ever allude to the great discovery which the doctor announced that he had made with his microscope.

On the evening of Kent's dismissal from the Erickson Foundation, the doctor dropped in to spend an hour or two with Crane.

"Wilkes called me up this afternoon," he began, when Crane had made him comfortable.

"Wilkes? Oh, yes, I remember. He's in biology over at the university, isn't he?"

"Up to his neck in it. I doubt if he's deeper in than that. Did I ever tell you about my little spat with him six months ago?" Crane shook his head, and the doctor freely confessed the humiliating episode of the vanishing protozoa. "Wilkes thought I was crazy drunk that morning. He told me this afternoon that he poured that priceless bottle of your historic bathwater down the kitchen sink the moment I was out of his house. He had promised me like a gentleman and a scholar that he would get one of the chemists to analyze it. When I asked for a report some ten days later, he assured me the chemist had found nothing but pure water with the usual traces of organic matter and minerals—lime, and such stuff—that are in all tapwater. Like a fool I believed him. Now he's kicking himself for the scurvy trick he played me."

"Why?" Crane demanded, scenting a clue at last to the incomprehensible mystery of the black widows.

"It's a long story. I'll cut it short. You remember that poisoned fish scare we had six months ago?"

"When the fish in the bay turned up all spotted, and you asked me to sterilize my bathwater?"

"Yes. And you remember how it passed off in a day or two? The fish seemed to recover completely, or else all the affected ones died. Anyhow, no biologist in this part of the world had curiosity enough to ask the Health Department for one of the spotted fish to examine. I don't blame them—I didn't think of it myself. Now here comes the fortunate part. Some crooked inspector in the department, instead of destroying the fish seized in the markets as required by law, sold the lot to a Japanese cannery down the coast. Some of that canned fish found its way to the table of Professor Hayashi, the expert in parasitology at the Technical College in Tokyo. The discolorations on the skin caught his eye at once. To cut a long story short, Hayashi's microscopical examination of the diseased skin revealed myriads of protozoa—the most rudimentary forms of animals—of species totally new to science. Being a German-trained Japanese expert on parasites, Hayashi went without food or sleep until he had prepared an exhaustive series of microphotographs of these strange new beasts."

The doctor paused long enough in his story to extract half a dozen beautiful photographs and the same number of his own hasty sketches, made the night when he examined Crane's bathwater, from his pocketbook.

"Compare the photographs with the sketches. The photographs are Hayashi's, the sketches mine. Professor Wilkes gave me those specimens of Hayashi's work this afternoon. It seems that Hayashi picked on Wilkes as being the likeliest man to recognize the protozoa if they were known. The fish had been canned a few miles south of here, according to the label on the can. Hence, Wilkes, being professor at the university here, and presumably not dead, would know all about what lay at his own back door. Unfortunately, Wilkes had poured the most conclusive evidence, and my one chance to be famous with it, down the kitchen sink. He called me up this afternoon to ask what is to be done about it. I have several suggestions, but I'm not going to share them with him. He's too fond of his kitchen. Well, what do you think of my sketches? As true to life as the microphotographs, aren't they?"

"You copied Hayashi's?"

The doctor laughed. "No, I drew them from what I saw under the microscope in that bathwater I got from you six months ago. It's a great pity that you recovered as quickly as you did from that unique itch."

"I may be able to oblige you again, in a day or two," Crane grinned. "But go on. You were going to say something."

"Only this. I fell for the biggest fool on earth. By the margin of a single stupid mistake, I have lost a new universe. If I had not gone over to see old Wilkes that morning, I should have kept on believing in my work. Now Hayashi will get whatever credit there may be in it. This stuff is brand new, I tell you!" he exclaimed, warming to his beloved protozoa. "These things could never have evolved from anything we know. Structurally they are entirely different from any that have ever been described. And to think that I saw them living and multiplying under the lenses of my own microscope!"

The doctor lapsed into moody silence. "Well," he concluded, "it's too late now. Still, Hayashi doesn't know the whole story. Until he or someone else explains why those prolific little pests stopped multiplying in the sea, we haven't even begun to explain them. I should have expected every fish in the Pacific Ocean to be as gorgeous as a rainbow two months after the infection started in our harbor. But it stopped suddenly and absolutely in a day. Why?"

"Ask me another. I'm not good at riddles. Want to see some more blood red bathwater?"

"Where?" the doctor exclaimed, leaping to his feet.

"In the bathtub, of course."

"Lead me to it!"

"It isn't there yet. But, if De Soto and I have any luck tomorrow, I'll brew you twenty gallons of the reddest water you ever saw. He and I have about finished his first two million-volt X-ray tube. It's no longer than my forearm. Built on entirely new principles. So, if my exposure to the hard X-rays had anything to do with the infected state of my skin, we should know it by tomorrow night. What do you think?"

Brown looked depressed. There were so many factors that his optimistic friend had overlooked that the doctor dared not feel enthusiastic.

"You forget the time element," he said. "One exposure, even of thirty hours, may not be sufficient by itself. Why did those fish suddenly recover? No; there is something beyond hard X-rays at work in all this. Your luck six months ago may have been only an accident due to a concurrence of causes that won't happen together again in a million years."

"Cheer up. We can only try, you know. This time tomorrow I may be wishing I were dead."

"I hope so," the doctor replied absently, dreaming of his lost universe. "In case an accident does happen, we must be prepared. You say De Soto's tube is built on entirely new principles?"

"New from beginning to end, from anode to cathode—like everything else he does. Lord! I wish I had one per cent of the brains that kid has."

"Then you might never duplicate that scarlet bath. It was the most brilliant thing you ever did. The very blunders of your own two million-volt tube may have been responsible for what happened."

"Possibly," Crane admitted. "X-rays were discovered half by accident. It begins to look as if my precious tube may have been in the same class. Something that Bork and I did in spite of ourselves touched off a real discovery—which we succeeded in smothering between us."

"And I, too," Brown sighed, "missed the essential thing. Well, we must be prepared. Will you take half a dozen of Bertha's eggs with you to the laboratory tomorrow? Don't let De Soto know about them. Keep them wrapped up in the pockets of your working coat."

"Don't you think," Crane suggested, "it is about time for you to give me a hint of your theory? I won't steal it."

"You'd be insane if you did. Even I haven't the nerve to talk it over with a biologist. Very well, here goes—your itch, my protozoa, and our black widows."

FOR an hour and a half the doctor defended the shrewd guesses and bold theories which he had devised to account for the apparently unnatural adventures in which he and Crane had participated. To Crane's frequent interruptions that the physics of the explanation, at least, was too wild for any sane man to listen to, the doctor retorted that only a hopeless pair of lunatics could have witnessed what Crane and he saw with their own eyes in the twenty-million-volt laboratory. Was that a fact of experience, or was it not? Did they see black widows by the hundred as huge as spider crabs, or didn't they? Well, then, the doctor continued somewhat irrationally, if nature can upset her so-called facts to suit herself, why can't she equally well break the puerile laws which we imagine for her discomfort? Hadn't all of the great generalizations of Nineteenth Century physics been scrapped or changed out of all recognition in the first three decades of the Twentieth?

Yes, Crane admitted, but why try to answer the old insanities with new ones even more insane? To which Brown replied that when in a lunatic asylum—meaning modern physics—do as the lunatics do; namely, cut your theories according to your facts.

It was a wild argument and a merry one. The climax was a roar of laughter from both disputants simultaneously. For it occurred to them that they were but slightly parodying the proceedings of two recent world scientific congresses which they had attended—Crane in physics, Brown in biology. No layman could have detected the slightest difference between their fantastic arguments and the profound debates that will make those great congresses forever memorable in the history of science.

"That settles it," Crane gasped, wiping the tears from his eyes. "I'll take a whole crate of eggs to the laboratory tomorrow."

"Don't!" the doctor implored. "Half a dozen, no more. I don't want a man as brainy as young De Soto is to suspect what I'm up to. The least hint to a man of his intelligence, and I'm dished. He would go into it for all he's worth and clean it up from beginning to end in a week."

"Perhaps he has already," Crane suggested quizzically. "By the way, all our crazy talk made me forget my bit of real news. Kent's fired."

"What! When?"

"This morning. De Soto told me all about it. The trustees, it seems, decided they didn't need Kent any longer, now that De Soto is bringing in the money by the trainload. So they kicked him out."

"The low hounds!"

"Oh, I don't know. Business is business. They made De Soto director."

"And he accepted?"

"Why not? They had no further use for Kent. Live and learn ethics, doctor. All professions aren't like yours. I only wish they were. Even De Soto seemed disgusted with humanity in general and with the President in particular. It was the first time I have seen him show any human feeling. He was quite glum all the afternoon till about six o'clock, when we finally managed to put his new tube together. Then he yawned—he's always yawning—and began laughing like the devil. I mean it; he laughed exactly as a good fundamentalist thinks the devil laughs when he sees some nice boy downing his first drink of bootleg whiskey. It made my flesh creep. I don't like that young fellow."

"You still distrust him?"

"Yes, and I don't know why. Sometimes I have a feeling that he is about five million years old."

"Absurd. You had better be going to bed, and so had I. Don't forget to call for those six eggs on your way to the laboratory tomorrow."

"I won't. How's Bertha, anyway?"

"Fine. She and Roderick have done nobly. My back garden is full of broilers now, and I haven't the heart to eat one of them. The housekeeper threatens to give notice unless I sell a dozen. She can go if she likes. Bertha is a joy, and I wouldn't hurt her feelings to pacify fifty housekeepers. Well, I'm going. See you in the morning."

Crane duly called for the six new laid eggs the next morning and joined De Soto at the laboratory at eight o'clock sharp. For once in his life De Soto seemed to be laboring under the strain of repressed excitement. Usually he was somewhat indifferent about his brilliant work, not to say bored by it all; today he could scarcely wait for Crane to begin trying out the new tube.

"Put on these," he ordered, handing Crane a long shroud of crackly transparent material, with overshoes, gloves and hood of the same. He himself was already armored for their dangerous work. The crackly stuff,

not unlike the thinnest isinglass, was another by-product of De Soto's incessant inventiveness. It had grown out of the work on insulators, although dependent upon different principles, and was sufficient to block completely all rays hard enough to penetrate forty feet of solid lead. Against the X-rays Crane expected to generate in the new tube it was more than ample protection.

The walls, floor, ceiling and window panes of De Soto's small private laboratory were closely "papered" with this thin, transparent ray insulation. It would not do to have stray radiations penetrating into adjacent laboratories and deranging delicate electrical apparatus.

Crane waved the proffered garments aside.

"No, thanks. I've worked around rays as hard as these, and I'm still kicking."

"Better not try it again," De Soto advised, with just the suspicion of a threat in his voice. "Put them on."

"Sorry, but I must decline," Crane replied with a defiant grin, his square jaw thrust slightly forward. "You see, I want to do a little experimenting myself."

For three seconds that seemed to Crane to stretch to three eternities, De Soto's blazing black eyes fixed upon his. "What is happening to me?" Crane thought. "I feel as if my brain were being torn to pieces."

"What experiment are you going to do?" he heard De Soto's voice asking in tones of deadly calm.

"Nothing much," Crane replied. He felt sane again. "I just wanted to verify my guess that rays as hard as these cannot affect human cells."

"Human cells?" the deadly voice echoed, slightly emphasizing the first word.

"Yes—the units from which our muscles, bones and nerves are built up. You know what I mean."

"I know what human cells are," De Soto said slowly, with deliberate ambiguity. His tone implied that he suspected Crane of an interest in cells not human. "Put on these things, and let us get to work."

"I have told you I prefer not to."

De Soto's eyes flashed ominously.

"Don't make it my unpleasant duty to discharge you for insubordination as my first action as director."

CRANE hesitated. For a second he was tempted to defy the new director and take his medicine. Then he remembered why he had swallowed his pride in the first place when Kent tried to make him resign. He also thought of Brown, and the disappointment of his friend should he fail in the matter of the eggs. Without a word he shed his working coat and hung it on a hook behind the door. De Soto followed him with his burning eyes.

"Why did you take off your coat? This material weighs very little. You won't be too warm with your coat on under this. I'm wearing mine."

"I'll feel freer without so many clothes," Crane replied off-handedly.

"You have something in the pockets of your coat that you wish to be exposed to the full effect of these rays. Take out whatever you have, and destroy it. There's an oxy-acetylene torch by that bench."

Crane tried to bluff it out. Going to his coat, he extracted the half dozen new laid eggs and casually exhibited them for De Soto's inspection.

"My lunch," he explained.

Without replying, De Soto took one of the eggs and held it up to the light.

"You eat them raw?"

"Are they raw?" Crane asked in well feigned astonishment. "That girl at the lunch counter must have done it as a joke on me—or else she was rushed and made a mistake."

For answer De Soto took the six eggs, one at a time, and smashed them against the wall behind Crane.

"I'll take you out to lunch," he laughed good-humoredly. Suddenly his whole manner darkened. His eyes blazing, he shot an accusing question at the pale face before him.

"Did you come back here last night after I left?"

"I don't get your drift."

"Do you know what kind of a tube this is?"

"A two-million-volt X-ray, if it's the one I've been helping you build."

"It is the same one. Could you make another like it?"

"How could I? You made the cathode and the anode yourself. I don't know the first thing about their construction. And I have no idea what that thing like a triple grid in the middle is for. All I know about your tube is what you've told me. You said it was for hard X-rays. It's all new to me."

"It might be a device of great commercial value?"

"For all I know it might."

"Go to the office and get your time. You are discharged."

Crane turned on his heel and walked out without a word.

CHAPTER VII.

Warned

CRANE did not bother about his pay check at once. It could be collected later. For the moment a matter of greater importance pressed. He sauntered into the small chemical laboratory where tests of materials were carried out in connection with the electrical work. Only one man, a technical assistant, was in the laboratory. Looking up from his work he greeted Crane with a curt nod. Like the rest of the staff he treated Crane coldly since the latter's degradation in rank.

"I'm coloring a meerschaum pipe," Crane volunteered. "Got any beeswax or anything of that kind?"

"There's some in the drawer under the bench—there by the window."

"Thanks," Crane helped himself to four cakes and walked out. On reaching his own office, he locked the door, and proceeded to take impressions of all his keys to the laboratories and workshops of the Foundation. It would be a simple matter to have duplicates made at some obscure shop in another quarter of the city. "They may put me in jail before I finish," he grinned to himself. "Anyhow, I'll give them a run for their money first."

In the business office Crane explained that he had come to collect his pay.

"But it is only the fifteenth of the month, Doctor Crane," the clerk objected. "Of course, if you want an advance, I daresay it can be arranged. I'll have to ask the head bookkeeper."

"Don't bother. I'm fired."

"Fired? What for?"

"Being too smart for our new director. Make out the usual month's bonus for discharge without notice."

"Sorry, but I can't. We don't give any bonus now."

"Since when?"

"The new rule went in yesterday, before Mr. Kent was discharged. The trustees made the rule before they elected Mr. De Soto."

"I see. They don't overlook anything, do they? Is the President of the Board anywhere about?" The clerk nodded. "All right, call him out, will you? It's the last favor I shall ever ask of anyone connected with the Erickson. Here are my keys."

"But I can't do that. He's busy."

"Never mind. Tell him I'm here with an urgent message from Mr. De Soto. Honest; I'm not fooling."

The clerk was fooled. Presently the high potentate himself hurried out of his lair to receive the urgent message in person.

"Yes, Doctor Crane? Perhaps you had better come into my office."

"Perhaps I had."

"Now, what is it?" the President demanded when the door was closed. Crane looked him squarely in the eyes.

"You can go to hell!" he said.

"I shall ask the Director to discharge you," the President roared when he recovered his breath.

"Too late. He just did it. I meant that message from myself to you personally. You're a pretty cheap sort of skate. Nevertheless, I'm rather sorry for you and the rest of this firm of pawnbrokers. De Soto is making you all multimillionaires in record time, isn't he? And he loves you all better than if you were his brothers? Fine. Take it from me, he hates every last one of you worse than a rat hates rat-poison. I know that young fellow; you don't. Look out that he doesn't leave you flat. That's all."

The President's face went a pasty yellow. For the first time it dawned on him that De Soto might have been laughing at him, not at the unfortunate Kent, when the latter was so swiftly fired. That laugh, in retrospect, had a peculiar quality. Swallowing what remained of his pride, the President motioned to Crane to be seated. Crane declined, and the President affected not to have noticed the rebuff.

"Of course, I should be very angry with you," he began jovially, "for what you said when you first came in. However, boys will be boys, eh? Now, don't get sore because you think you've lost your job. Perhaps you haven't. How would you like to be my technical secretary? I get hundreds of letters from all sorts of people that I can't answer properly. You know how it is in my position. What about it? Fifty per cent. increase in salary, of course."

Without replying, De Soto took one of the eggs and held it up to the light.

Crane slowly shook his head. Business was business, as no one understood better than he. The President's purpose was evident. But Crane was not to be bribed into the dangerous job of spying on De Soto while an employee of the Foundation.

"I'm afraid it wouldn't do," he said. "The Foundation can't afford to antagonize its new director."

The President regarded him long and thoughtfully before replying.

"You're loyal to us, aren't you?" he remarked with evident sincerity, as if the discovery surprised him—as indeed it well might.

"I have some pride in my profession, if that is what you mean," Crane admitted.

"Am I to infer that you think Mr. De Soto lacks professional pride?"

"De Soto is too brainy to take pride in anything. That's the trouble with him."

"H'm. You think he may be playing a game of his own?" Crane nodded slightly. "What sort of a game?"

"As De Soto has several thousand times the mind that I have, I can't guess what his game is. It may all be my imagination."

THE President paced the carpet in silence. Coming to a halt before Crane, he went to the roots of his doubt.

"Why are you telling me all this? Can't you see that it may be to your own disadvantage?"

"That's easy. Because I hate De Soto. I know," he continued with a dry smile, "that men don't hate one another nowadays outside of the movies. It simply isn't done—in the way that I hate De Soto. Still, I do, and that is the plain fact."

"Why do you hate him?"

"How can I tell? It may be repressed professional jealousy, for all I know. More probably it is based on fear—or cowardice, if you like to put it so. I'm afraid of what he may do to me, and to the Foundation."

"What do you suspect?"

"Nothing definite. Everything about the man, except his scientific ability, is vaguely rotten. My guess is that he is planning something brand new to take us all by surprise. We probably shan't know what has happened to us until it is all over."

"Would you care to act as my agent to keep an eye on things? No one need know that you are connected with me or with the Foundation in any way."

"I'm not a detective. Still, in case I get into trouble, I may as well tell you that I intend to keep an eye on Mr. De Soto on my own account."

The President touched a button. When the clerk appeared, he requested him to make out a check to Doctor Crane for the amount of five years' salary, "as a token of appreciation," he added for the clerk's misinformation, "for his excellent services to the Foundation in the past." Crane did not object; he felt that he might need the money before settling with De Soto. It was a worthy cause.

"Now, Doctor Crane, perhaps you can be more explicit. What do you plan?"

"Just what I have told you. If I were rich," he added with a grin, "I should go right back to the laboratory now and shoot De Soto. Then I'd hire the best lawyer in the country to get me off. Your new Director is more dangerous than any mad dog in the country."

"In what way dangerous? You are making pretty serious charges, you know."

"I can't tell you definitely, because I don't understand myself. But I can convince you, or any other business man, that De Soto had better be handled with care. The Erickson has sent quite a few businesses to the wall recently, hasn't it? The whole industry of insulation as it was a short time ago, for example. We all saw how it was done. Has it never occurred to the trustees that the Erickson might go the same way?"

The point was obvious, and the President saw it. A clammy perspiration prickled out on various parts of his body. He felt quite ill.

"But Mr. De Soto is under contract to us for ten years," he protested weakly.

"What of it? He won't have to break his contract to break you."

"He can't be so unscrupulous as you suggest. Who ever heard of a scientist turning crook like that? All the men on this staff are as honest as the day is long."

"Perhaps it is the other way about. De Soto may have been a crook before he took up science. According to his story he comes from Buenos Aires. I've pumped him. He never saw South America. As to contracts, he has as little respect for them as he has for—I don't know what. Why shouldn't he leave you in the lurch tomorrow, if he likes, and go over to some of your competitors? Before the courts had settled the row, you would be flat broke."

The President was now perspiring freely. If De Soto could lie about his native country, why not about business matters? The possibilities of a broken contract were too obvious and too awful to be contemplated in silence.

"What would you do in our case—provided your suspicions are justified?"

"Sell out to my nearest competitors. Let them absorb the shock. It's coming."

"We can't," the President almost groaned. "Business details—I needn't bother you. But we can't." He tried to believe that Crane was merely letting his imagination run wild, but he could not. Innumerable slight inconsistencies of word and action on De Soto's part loomed up now with a sinister significance. For the first time the President suspected that De Soto's perpetual good humor and high spirits were the rather cheap disguise assumed by a man who had much to conceal. "I'm glad you have warned us," he admitted unhappily. "If you learn anything you will let us know? You won't find us ungrateful. Business is business, you know," he concluded with a rueful attempt at jocularity.

"I know," Crane retorted grimly. "So does Kent. That's why I came to tell you what I did first. I had no idea it would end this way. Thanks for the check; I'll need it. And please remember that if I get into hot water, it will pay the Foundation handsomely to fish me out. We are working on the same job, but for different reasons. Good morning, and thanks again."

They parted almost on good terms, but not quite. Crane still despised the Foundation's business methods; the President resented Crane's greater penetration in seeing a practical danger which he himself should have noticed months ago.

Crane's guess as to De Soto's probable financial tactics was shrewd but wrong. De Soto had no intention of using any of the obvious devices imagined by Crane. They lacked humor, and De Soto enjoyed nothing so much as a good laugh.

The next, and last, person to be warned was Alice. She, presumably, would still be living at the Director's residence; De Soto could not have turned the Kents into the street already. Hailing a cab, Crane directed the driver to take him to a locksmith's on the other side of the city. In the dingy little shop he asked the dried-up old tinker to duplicate the keys impressed in the wax, and to have them finished by five o'clock. "A rush order," he explained. "My partner lost his office keys, and I lent him mine." Crane then drove to the Director's residence and asked for Mr. Kent. The man who answered replied that Mr. Kent was out.

"Is Miss Kent at home?"

"I will inquire."

Before surrendering his card, Crane scribbled on it, "May I see you for a few minutes? Important."

ALTHOUGH he had not seen Alice since the night when she passed him in her car with the newly hired De Soto, he felt reasonably certain of her state of mind. Indeed Kent had spared no hint to make it plain that Alice, once fond of Crane, had now no further use for him, and that he need not trouble to call. While waiting for her to come down, Crane briefly reviewed his own feelings toward her, in order to be sure of himself and not blunder in his delicate task. Had he ever loved her?

Looking back on their friendship he admitted that he might have loved her, if circumstances had permitted their bantering goodfellowship to ripen, but that he had not. Her sudden and complete discarding of his friendship argued that she also had never cared seriously for him. If her indifference had been a pose to quicken his love for her, she would not have let it drag on indefinitely as she had. Her infatuation for De Soto, like his for her—according to Kent's sly, optimistic hints dropped to exasperate Crane—was genuine. Finally, Crane admitted to himself, he was a bachelor by instinct, as he had told Bork that afternoon in the high tension laboratory. A family was, after all, to a man of his temperament, only a lot of grief, as he had declared. He much preferred to live his own life, with its long working hours, its snatches of sleep, irregular meals, and scientific fights with Brown, to all the comforts of any home.

Alice entered, pale and distraught. He saw that she was still beautiful. But she had aged ten years, and all her happy spontaneity was gone. Worry over her father's plight, he speculated, could not account for all of the sad change. And instantly his hatred against De Soto doubled. He himself had never loved her, he now realized fully. But she had been such a good fellow that he resented De Soto's malign influence over her as fiercely as if she were his wife.

"It must be months since I've seen you, Doctor Crane," she said, extending her hand.

"Several, Miss Kent," he replied, noticing the formality of her address. Well, he could dance to any tune she called.

"You wished to see me about something?"

"Yes." He went to the point at once. "About Mr. De Soto."

"I must refuse to discuss Mr. De Soto with you," she interrupted hastily, her cheeks flaming.

"I don't intend to discuss him. As one human being to another, I shall tell you a fact that you should know. I do not apologize for what I say. It is none of my business. That is true. And it violates every decency of good society. What of it?"

"I won't listen!" she cried, putting her hands over her ears, and starting for the door. "Please go."

In one stride he overtook her. Forcing her hands to her sides, he delivered his message.

"De Soto is rotten to the core. He is not fit for any decent human being to associate with. If you marry him, you will kill yourself to be rid of him. Use your eyes and your brains!"

He released her hands and she fled, sobbing.

"Well, I've done it," he muttered. "It will make her watch him anyway. But I'm too late. That fool Kent!"

From the Kent's home he hurried to call on Brown. The doctor was in his office busy with a patient. At last the sufferer left, and Crane was admitted.

"Hullo," Brown exclaimed, "Not working today? Don't say you're itching again," he cried, hopefully.

"No such luck," Crane grinned. "But I'm hot enough. De Soto fired me the first thing this morning."

In answer to the doctor's solicitous questions, Crane briefly told the whole story, including his interviews with the President and Alice. Brown was shocked. The thought that his half dozen eggs had brought his friend to grief filled him with remorse and dismay.

"What will you do now?" he asked.

"Take things easy for a time. Till five o'clock this afternoon, to be exact. I forgot to mention that I'm having duplicate keys made to all the laboratories and workshops of the Erickson. They'll be done at five."

"What! You don't mean to say you're going to burglarize the place? That is what it would amount to, now that you are discharged. Better not try anything so foolish."

"It may be foolish, but I'm set on it. And I'm going to make my first attempt about one o'clock tomorrow morning—just when it's darkest. I know when the watchman makes his rounds to the various buildings. He and I will contrive not to meet. There's no danger worth mentioning. If they catch me at it, I shall appeal to the President and ask him to lie me out of the scrape. But I'm going to find out what De Soto is up to, no matter what it costs. The sooner the better."

"I agree to the last," Brown seconded. "The way he smashed those eggs when he found they were raw looks bad. I don't half like it. De Soto knows something he shouldn't. We've got to learn what it is."

"We?" Crane echoed.

"Yes. You and I. Now, don't argue. But for me, you never would have got into this mess. I'm going with you to stand guard and see that you don't go to the penitentiary. Don't put too much faith in your friend the President."

"I don't," Crane grinned. "If he saw a chance of making a dollar out of it, he would double-cross himself. Well, I shan't mind if you do come. Two will be safer than one. You can slip away if anything unpleasant happens. Shall I call for you about twelve tonight?"

"All right. It has just occurred to me that we shall have a glorious chance to perform a crucial experiment if we can get hold of De Soto's tube for a second or two. Can I bring Bertha? I'll drug her before we start so she won't squawk and give us away."

"Bring her along. She can stand the risk, if we can."

De Soto's morning, after he had discharged Crane, passed pleasantly enough. The lack of an assistant did not inconvenience him, as he was essentially a lonely worker. In fact he had retained Crane more as a blind to the trustees than as a help to himself. By acquiescing in what seemed to be their desires with regard to Crane, he not only proved himself a good co-operator, but also a decent, human fellow, whose work need not be carried out in secret. Actually he feared no ordinary physicist. To understand what De Soto was doing, a spy would require at least his own intelligence.

When Crane walked out, De Soto's first act was to lock the door and pull down all the window shades. He was now secure from uninvited observation. No ray could penetrate the insulated walls, floor, windows and ceiling to give workers in neighboring laboratories a clue to the nature of the radiations which De Soto hoped to generate.

He was about to set his tube in operation when he paused thoughtfully, as if in doubt. Going to the closet, where the suits of insulating fabric hung, he selected a second shroud, pair of gloves, hood and overshoes of the transparent material, and put on the whole outfit over those he already wore. This double protection might be unnecessary; he rather thought it was. But De Soto was a cautious worker, careful of his perfectly tuned body, and he took no chances.

Ready at last for his test, he carefully connected his eighteen-inch tube to the terminals of what Crane called the devil box—a black cubic yard of insulated steel, apparently, capable of delivering a steady current at anything from one volt pressure to twenty million. If necessary, he could pass the full twenty million through his tube for a week. Having made the requisite adjustments, he released the full twenty million volts at one turn of a thumb screw.

There was no hissing crackle, no sudden splash of blinding light from the tube, no fuss or fury of any sort whatever. For all that an unskilled observer could have told, the tube was dead. Whatever was taking place in it, if anything, was far beyond the spectrum of light. If waves were being generated under the terrific impact of the electrons in the tube, ripped from the cathode by the full bolt of twenty million volts, those waves were so short that they affected no eye. Anyone except its inventor might have casually picked up the tube with his bare hand.

De Soto seemed satisfied. He disconnected the tube and turned a small screw on its side. Gradually, a thin pencil of black metal advanced into the vacuum, directly into the path that the discharge from the cathode must follow. The tube was again connected and the full current turned on and quickly off. Again there was no flash or other obvious indication that anything had happened. By a simple device it was possible to remove the pencil of metal from the tube without admitting a single atom of gas into the tube. Having removed the pencil, De Soto walked to the farther end of the laboratory, adjusted the pencil between the terminals of a huge storage battery, and turned on half the current. The metal pencil glowed from dull red to scarlet, then to pale blue, and finally to a dazzling white as the current passed through it. De Soto reached for a pocket spectroscope and studied the light emitted by the incandescent metal. Evidently the result so far was satisfactory, for he smiled. Still keeping his eye on the spectrum, he reached out with one hand and switched on the full current. There was a flash, a sharp report, and darkness. He had seen all that was necessary. The pattern of brilliantly colored lines crossing the spectrum as the incandescent metal exploded to atoms told its own story. The metal had been transmuted into a different element from what it had been before the full discharge of the twenty million volt tube struck it.

ONE after another De Soto inserted pencils of the metallic elements into his tube, gave them the limit of what the devil box concealed, extracted them, and subjected them to the simple, conclusive tests of flash spectrum and spark spectrum. He was already bored; the outcome was known in advance. These verifications of what he knew must take place in his hardest of all rays were but the necessary tests to assure himself that the construction of his tube was not faulty. As a mere detail in his true project, he had accomplished, on a wholesale scale, the transmutation of the elements—the dream of the alchemists and one goal of modern technology. Others had knocked the electron shells off the atoms of the elements, and still more ingenious experimenters had even tampered with the all but inaccessible inner core, the nucleus. By controlling the whole scale of radiation, from the longest radio waves to the shortest cosmic rays, in one simple, comprehensive generator, De Soto could pass up or down the whole series of chemical elements at will, as an accomplished pianist strums over his octaves. All this, however, was but the first step toward his goal. The hard, invisible, new radiations released by the transmutation of one element into another were the tools he required for his untried project.

For the moment he was lazily satisfied. After all, it was no great feat. Had he not done it when he did, some routine worker in physics must have succeeded within ten years. Literally scores were racing against one another along parallel roads to the same end. Where he surpassed what the natural development of physics would have suggested, was in his absolute control of the mechanism of disintegration. No sudden outgush of energy destroyed his apparatus in uncontrollable fury. The perfection of his technique permitted him to stop instantly any explosion of matter that might start; in fact an automatic regulator of the simplest pattern—simple, that is, to anyone with the eye for seeing nature as it is—held the incipient whirlwinds of destruction in leash.

So far all was well. To proceed farther he needed new materials. No rudimentary metal would serve his purpose. He must have highly complex compounds of a score of elements, all delicately adjusted in perfect, natural balance. The man-made products of the chemical laboratory were too artificial. If one would question nature, he must use the living things that are nature's most perfect mode of expression.

As he raised the blinds, he pondered his next step, and he smiled. Nature, or chance, he thought, had been kind to him. It had given him a perfect body and an unparalleled mind. What more could he wish? A partner with whom to share these bounties of generous mother nature. The thought of what he was about to do suddenly doubled him up in a spasm of laughter.

"Millions and millions and millions like her," he gasped, "and they don't know what is going to happen. All like her, every last one of them. How long will it last? Another ten or twenty million years? Or perhaps thirty million?" For a moment his mirth overpowered him. He was helpless, till his bitter humor died of its own exhaustion. "Thirty years," he said slowly, coldly, in answer to his own sardonic questions. "Eighty years from now every living thing will be happy. This is the end we have striven for since the days when we lived with beasts, and like beasts, in mouldy caves. Who will ever guess? Frogs and guinea pigs, Alice and the millions like her, my own children, will never know what I have done for them. What a joke!"

He removed his protecting hoods, shrouds, gloves and overshoes, and strolled over to take a last look at his tube. An exclamation of dismay burst from his lips. The crystal window of the tube glowed with a faint green fluorescence. Leaping to the devil box, he searched frantically for the faulty connection which permitted the current to leak into the box. There was no means of "killing" the whole box; it was automatic and self-contained. Until he found the leak there was nothing to be done. Not succeeding in his first dozen frenzied trials of the screw switches, he raced to clothe himself again in his protective armor. Was he too late? The hardness of the rays emitted along with that pale fluorescence was an unknown quantity until he could determine the strength of the current leaking from the box. In his confusion he had not thought of the obvious way of disconnecting the tube from the box entirely, but had assumed that some switch was not fully open. Hence his first frantic attempts now rose up to reproach him with the stigma of stupidity.

"Am I like the rest?" he gasped, hurrying back to the box. "A blundering fool after all?"

This time he found the trouble at once. The one screw switch that he could have sworn he opened was still just barely closed. For anyone working around such deadly apparatus, this trivial oversight was a blunder of the first magnitude. Approximately two million volts were still streaming into the tube.

"I should have tested that switch first," he muttered. "Am I a common fool? Well, this is a warning to do everything hereafter in the stupid, routine way these cattle use about this stable."

Once more he removed his protective garments. This time he found everything 'dead,' as it should have been. For a moment he felt old and tired. Before he realized that he was speaking, his lips had propounded a strange question.

"Who am I?" The voice seemed to speak from a forgotten world. "And what am I doing here?" Again the words seemed uneasily familiar. "Didn't I make a mistake like that before?" he continued in his normal voice. "Where was it, and when? Strange that I can't remember. Yet I could swear that I once saw a green light like that, only more intense. It brightened, and grew white. Then a black piston destroyed it in total darkness. How could that be? Only the complete destruction of radiation could give such an effect. I never did this before. What is the matter with me?"

Unable to answer, he left the laboratory, carefully locking the door behind him. Once outside in the brilliant sunshine he recovered rapidly. The cloudiness of his mind quickly cleared, and he began visualizing his immediate purpose. It was a few minutes past twelve. He stepped into the business office and used the telephone.

"Is Miss Kent speaking?" he asked when he got his number. "This is Mr. De Soto. I've been working hard all the morning, and don't fancy going to a restaurant for lunch. Can you give me something if I come out to the house? Anything you have will do."

The happy girl's reply was scarcely coherent. Yet De Soto understood the sense behind the nonsense of her words.

"Thank you, Alice. I shall be right out."

As he got into a taxi the queer sensation again overcame him for a moment. "Am I going soft? Bah! All I need is food and exercise."

To Alice the luncheon was nectar and ambrosia; to De Soto it tasted like lobster and icewater, which is partly what it was. The food, however, was not his chief concern. As they passed into the conservatory, he came to the point.

"Alice," he began in his resonant voice, "what happened yesterday has made me think a great deal about your future and your father's. Who would take care of you if I were to go away? No; please don't interrupt. You do need looking after, and so do I. Why can't we compromise? I have loved you since the first night I saw you. Will you marry me—now, this afternoon?"

Her answer was a foregone conclusion, and De Soto knew it. Feeling her warm young body in his arms he almost got a thrill.

THEY were married at three o'clock by a justice of the peace. Kent was not present, as he had disappeared into the bowels of the city in search of a job and could not be reached by telephone, radio, or prayer.

It cannot truthfully be said that love transformed Miguel De Soto, however devoutly such a consummation was to be desired. His marriage was for a definite purpose. If, toward the end, he got more than he bargained for in the way of love, it was by accident and not design.

To prepare for what he hoped to do, he took Alice on a shopping expedition as soon as they were married. She ordered whatever took her fancy in the way of personal adornment, while De Soto, admitting a weakness which she had never suspected, won her bridal love completely by his own purchases. They were made in queer quarters of the city, near the market places, where live stock is offered for sale. Small animals, he declared, had been his boyhood friends, and now that he was a sedate married man he could afford to gratify the thwarted longings of years to possess a select menagerie of his own. Guinea pigs, white rats and robust frogs were his special pets, although he also betrayed a weakness for the common chicken. All this squeaking, croaking, crowing and cackling family was ordered to be delivered at once to the Foundation residence—Kent's former home—and to be installed in the appropriate pens, coops, runways, ponds and cages by nightfall. By liberal bonuses De Soto extracted a ready promise that his happy family would all be settled in the back garden by six o'clock that evening. It was a collection that would have made a geneticist's mouth water. Alice almost cried, so happy was she at the unsuspected tenderness of her husband and lover.

At six o'clock Kent returned, footsore, heavy of heart and weary after a fruitless search all day for employment, to be greeted by his new son-in-law. Alice at the moment was upstairs. With great tact and delicacy De Soto hinted that Kent had better find quarters elsewhere, for a few weeks at least. Kent was so overcome with joy to learn that Alice at last had captured the elusive, reserved young genius—and millionaire—that he fell in with the suggestion at once.

"I understand how it is, my boy," he assured De Soto, laying a fatherly hand on his shoulder. "Just let me run upstairs and tell Alice how happy I am, and I'll be off at once."

De Soto resented the "my boy" of his father-in-law, but did not show it on his smiling face.

"By the way," he said casually, "since I am now one of the family, I shall pay all bills." He unobtrusively slipped a handsome check into Kent's hand. "As you belong with us by rights, it is only fair that I should take care of your hotel expenses." De Soto was not mean. Money meant nothing to him, and he cared a little less than nothing for the things that can be bought by money or genius. Crane was right when he told the President that De Soto was too brainy to take pride in anything.

While Kent was upstairs bidding Alice adieu and almost crying with her over this happy issue out of all their afflictions, De Soto paced the dining room carpet like a trapped tiger. For the first time that he could remember he felt maddeningly, stupidly ill. A hot prickling tingled over every inch of his skin like needle points of fire. It had first come on, faintly, while he was buying guinea pigs with Alice. Although he gave her no hint of the distress, it had required all of his self-control to act as if he were in perfect health. To one who recalled only the easy sense of wellbeing of a young and healthy animal, the first experience of illness was mental torture not to be endured. De Soto was out of his depth. What should he do? Consult a doctor? He would ask Kent the name of a reliable man the moment he came downstairs.

Taking a grip on himself as he heard Kent's step, De Soto stopped his feline pacing and stood rigidly still.

"Who is your family physician?" he asked in a level voice.

"Brown," Kent replied, somewhat surprised. "Most of your staff consult him. Not feeling unwell, I hope?"

"Oh, no. But I thought Alice may have been doctoring with the wrong man. She has looked rather pale the last few weeks."

"That will all mend itself now," Kent assured him. "You are the right doctor for her."

The moment he was gone, De Soto bounded upstairs and tapped on his wife's door. "It is Miguel."

"Come in," she cried in a low voice.

"Alice," he began, "can you ever forgive me for running away and leaving you to dine alone? I have just remembered that I left a switch closed in my laboratory. I must go back at once, or the whole place may be wrecked."

"Can't you telephone to someone?"

"No. It is too dangerous."

Her face went white. "Let me come too," she begged.

"That would be worse than ever. I know exactly what to do. There is not the slightest danger to me. Anyone else——" There was no need to finish the sentence; he had produced the intended effect. "Don't expect me till you see me—I may be hours."

She kissed him passionately.

"I won't be a drag on you," she declared, "even on our wedding day."

For reasons of his own, he went out by the back door. On his way through the service port, he hastily emptied half a sack of potatoes into a box and tucked the sack under his arm. In the patio he found that the assorted pets he had purchased were all comfortably housed in their respective quarters.

"I may as well do two things at once," he muttered, slipping two large frogs and a pair of guinea pigs into the sack. "She might ask questions if she saw me taking these away in the morning."

Unobserved by any of the servants he got the sack into Alice's car. His immediate destination was Doctor Brown's house. At a drug store he learned the doctor's address.

THE doctor was just sitting down to a bachelor's dinner when the housekeeper announced that Mr. De Soto wished to see him at once. Brown rose with alacrity. He and De Soto had not met. The doctor, however, felt that he knew De Soto better perhaps than the young man knew himself. He found his caller in the study.

De Soto went straight to the point.

"Mr. Kent recommended you to me. For the past three or four hours my whole skin has felt as if it were on fire. Will you examine me? I may tell you that Miss Kent and I were married this afternoon."

"No wonder you are over-anxious about yourself," the doctor laughed, concealing his shock at the news of Alice's marriage. If De Soto was the man Crane thought him, poor Alice had been undeservedly punished. Brown had always liked her. Single or married, he silently resolved, he would stick by her.

"Is my condition likely to be serious?" De Soto asked, his vibrant voice growing husky with repressed animal fear.

"Probably not. I treated a similar case successfully a short time ago."

A curious change came over De Soto's eyes. For a moment they might have been those of a wild beast trapped and about to be killed. Brown caught the flash. It convinced him that Crane was not far wrong in his estimate of this young man.

"What was the patient's name?" De Soto demanded. His question was harsh and hoarse with fear.

To Brown it was evident that De Soto suspected Crane of having used the forbidden tube secretly. The doctor rose to the occasion.

"Oh," he replied, "the case I speak of was six months ago. What was the man's name? Let me think. It was before you came here. He was an assistant at the Foundation and got into trouble. You may have heard of him committing suicide. I've got it. Bork. That was the man."

"Aren't you mistaken?" De Soto asked in a voice which he did not recognize as his own. The question came from his lips involuntarily, as if some personality deeper than his own were expressing a doubt.

"I think not. Why do you ask?"

"Ask what?" De Soto rubbed the back of his hand across his eyes.

"You've been working pretty hard of late, haven't you? Take my advice and lay off for a spell. You just had a slight lapse of memory then. Well, the first thing is to ease your skin. We can do that here, in my bathroom."

Brown himself gave De Soto his bath. The moment the patient was out of the tub, the doctor hustled him into the dressing room and rubbed him down thoroughly with disinfectants. He was not going to lose the priceless bathwater this time, or have any third party see it pass from pink to crimson.

"You will be comfortable for an hour or two anyway. I suppose you won't want to go home until you feel sure you're cured. Did you tell your wife anything?"

De Soto confided the fiction of the danger of the laboratory, but saw no necessity for mentioning the sack and what it contained.

"Fine. Go to a hotel and spend the night there. Repeat the treatment every three hours. I'll give you a prescription for some stronger stuff. Telephone to your wife that the job at the laboratory will keep you there till ten or eleven tomorrow morning. Come and see me again at eight."

Promising to carry out the doctor's instructions to the letter, De Soto left. The desk clerk at the hotel addressed him by name, feeling highly honored to have as a guest the young inventor whose picture was always appearing in the papers. De Soto got the best room and bath in the hotel. Morbidly concerned about his health, he did not wait three hours to repeat Brown's treatment, but did it at once with drastic thoroughness. Then, cold with fear, he lay down to torture himself for two hours with unreasonable fancies. Brown had assured him the other man recovered quickly and easily. Would he? His fear of bodily discomfort was not cowardice, but simply the natural reaction of an animal experiencing its first pain.

The two hours passed without the slightest recurrence of the symptoms. Encouraged, De Soto repeated the bath and disinfection, and lay down again, this time with dawning hope. Luck stayed with him. And so it went, with complete success, till two in the morning. Feeling that he was free of his trouble for good, De Soto dressed and left the hotel. The numerous bathings and rubbings had made him feel like his old self, full of energy and eager for work. He got his car and drove to the laboratory. The sack had not been molested during his stay in the hotel.

CHAPTER VIII.

Trapped

SHORTLY before midnight, while De Soto in his hotel room was busy with his prophylaxis, Crane descended upon the doctor to prepare for the proposed raid on the forbidden laboratory. Brown knew that he was taking his reputation, if not his life, in his hands by sharing Crane's somewhat foolhardy enterprise. Nevertheless he was determined to go through with it for scientific reasons as well as for the sake of friendship.

Crane found the doctor peering through his binocular microscope.

"Anything new?" he asked.

"Not exactly. The same protozoa that you contributed to the cause of science. This really is most extraordinary. Old Wilkes would give his right eye for

one look at these. They mustn't be exposed to the light too long, or they'll vanish into nothing."

In answer to Crane's rapid fire of questions, the doctor explained how he had secured his fresh supply of protozoa. The announcement that De Soto and Alice were married was received in cold silence. What could be said? The time for talk was past.

"De Soto has blundered," Crane hazarded finally. "What it took thirty hours for the two million volt tube to develop on my skin has shown up on his in half a day. This must have happened after I left this morning. My hunch is that he doesn't know what he is doing. Well, shall we be going?"

"If you insist, we may as well." The doctor pocketed his flashlight and a small medicine case. "I'll go and give Bertha her sleeping potion and join you in front."

Forty minutes later the two rash men were outside the door of De Soto's laboratory. Brown carried a large paper market bag in which the drugged brown hen reposed limply and silently. There was some slight difficulty at first in forcing the new key into the lock. Crane began to swear softly.

"Hadn't we better give it up?" Brown suggested. "A superstitious man would say our trouble in forcing an entrance is a sign from Heaven to quit."

For a moment Crane was inclined to agree. His square-jawed obstinacy, however, persisted.

"There," he whispered at last, as the key turned in the lock. "In with you!"

Before turning on the lights, Crane cautiously felt his way from one window to the next, making sure that the iron shutters had been closed as usual for the night.

"All safe," he announced, rejoining Brown by the door, and turning on the lights. "Now to find out what friend De Soto thinks he is doing."

"Your key?" Brown suggested. "Hadn't you better leave it in the lock?"

"No. The watchman is not due this way for nearly two hours yet. But suppose he were to come round out of his regular beat. If he found the door locked from the inside he would ring till he was let in. Otherwise he would just open the door, turn on the lights, look around from here and lock up again. You must stand here and switch off the lights if you hear anyone coming. I shall duck into that closet—where the insulating togs are hung—and wait till he goes away again. After turning off the lights, you sneak round behind that steel cabinet and stand as close as you can to the window. The watchman won't see you from where he stands. Take the hen with you, of course."

To forestall the unexpected, as all trained scientists do, the conspirators rehearsed their parts six times before attempting any experiment. While Brown switched the lights on and off, Crane practised his disappearing act between the devil box and the closet. The doctor for his part managed to turn off the lights and vanish behind the steel cabinet almost in the same moment.

"Safety first," Crane grinned when the rehearsal ended. "The unforeseen always happens. Turn off the lights till I give the word."

As a last precaution, he unbolted the iron shutters of the window by which Brown was to stand in case of danger, unlocked and raised the window, and finally closed the shutters without rebolting them.

"If we're caught, you fling open the shutters and step out of the window. Then beat it."

"And leave you to face the music? What do you take me for?"

"A man of common sense. Don't argue. It is as much to my advantage as it is to yours not to be caught four-handed, as it were. The President will take care of me. Your reputation would be gone forever. Now, do as I say. I'm the captain here; you're a buck private in the rear rank."

After much further argument Brown consented. The point that finally won him over was quite unanswerable. Crane refused to start the experiment unless the doctor first gave his word as a gentleman to obey orders to the letter.

"We don't know what sort of rays De Soto's tube generates," Crane remarked, reaching into the closet for a protective suit. "Let us take no chances. Put on double armor."

Their preparations at last complete, they hopefully set about the experiment for which they had come. Bertha, still soundly drugged, was left in her sack by Brown's emergency window. If the tube generated nothing more penetrating than even hard X-ray, the unsuspecting hen would be amply dosed where she lay. But Crane, examining the curiously compact mechanism of De Soto's little masterpiece, had an uneasy feeling that the tube could emit radiations infinitely more dangerous than the most penetrating rays known to human science. Trusting that their double protection was sufficient, they tried to connect the stocky little tube to the black devil box.

For five minutes Crane fumed and fussed at the ridiculously simple terminals.

"Better take up your station by the lights," he snapped irritably to the helpless doctor. "I can't seem to make it work. We may be fooling here till daybreak."

Brown humbly retired to the door and, to reassure his exasperated collaborator, lightly laid his fingers on the buttons controlling the lights. Crane had not the least idea of what he was doing. Accustomed to the usual sputtering of ordinary tubes he naturally imagined that nothing was taking place in the silent, dead-looking apparatus before him. The transparent gloves, thinner than silk, seemed to interfere with his manipulations. With a gesture of irritation, he started pulling them off, when Brown sharply stopped him.

"Don't do that! How do you know that box is safe?"

"The box can't do any harm. It's the tube that counts. Why doesn't it glow?"

"Don't take off your gloves! It may be—."

The doctor's expostulation was cut short by a drowsy voice from the window that seemed to ask "What?"

"The lights!" Crane muttered tensely.

Instantly the laboratory was plunged in total darkness.

Brown recovered his nerve first.

"That was only Bertha coming to," he laughed. "Shall I switch on the lights?"

Crane assented, and once more began tinkering desperately with the connections. Barely had he started when the lights went off again. For the moment he forgot his own instructions to Brown.

"What's up now?" he fretted.

"Steps! Duck!"

As he shut the closet door noiselessly after him, Crane heard a key being inserted into the lock of the laboratory door. Brown was already in his station by the window, praying that Bertha would not continue talking in her sleep. The door opened, and the lights were turned on. It was De Soto, carrying his sack. Neither Crane from his coal-black closet, nor Brown from his station by the window could see who the intruder was. The doctor wondered why the supposed watchman did not turn off the lights and go away. To their horror both men heard the door being closed, the key turned in the lock, and the sound of confident footfalls advancing into the laboratory. Brown had the additional discomfort of knowing that the lights were still on.

WHAT followed was like a hideous nightmare to the three participants. In four minutes history was made on a scale that would have paralyzed the minds of at least two of the protagonists had they but dreamed what their foolhardy tampering with forces beyond their childish understanding would precipitate. Neither Crane nor the doctor saw in De Soto's outburst of fury anything more significant than the ungovernable rage of an overwrought man magnifying a real, but not very important wrong, into a cosmic disaster. Their crass bungling had unchained the devil. If any justification for De Soto's career be possible, it resides in the history of those four epoch-making minutes. According to his own account, he intended something quite different for the world, and for Alice in particular, from his actual campaign. We have only his word for all of this. But, in the absence of conclusive evidence to the contrary, it is simplest to assume that De Soto was not a liar.

The historic episode began with a hoarse, despairing cry from De Soto. In one amazed glance, as he walked toward the black devil box, he had noticed that the tube was fully connected as efficiently as if he himself had linked up the twenty million volts to the evil fiend of his own devising.

"I'm a fool like the rest," he wailed, dropping the sack with the frogs and the guinea pigs. "I left it on!"

He darted for the closet to fetch himself a suit of the transparent armor. Crane heard him coming, and squeezed himself into the farthest corner behind three of the dangling shrouds. De Soto groped for a shroud, gloves and overshoes without looking at what his hands grasped. Shouting incoherent nothings he got himself into a single suit, and darted for the devil box to disconnect the tube.

"I should have done this first," he raved, realizing his blunder too late. "Fool, fool, fool! What am I?"

Bertha brought the tragedy to its climax. As De Soto's lightning fingers disconnected the tube, a final surge of energy ripped the innermost cells of her body apart. Although she was only a brown hen, that exquisite pain gave her for a fraction of a second a voice that was three parts human. Her croaking shriek rose shrilly above the unnatural cries of the outraged guinea pigs and frogs in the sack, whose innermost sanctity of life had also been violated in that abrupt surge, and froze the fingers of the man blundering at the tube.

"What was that?" he yelled, his voice the cry of a lost animal facing death.

As if in answer to his question an iron shutter seemed to open of itself; a black mass hurled itself into the blacker night, and the wailing shriek of the outraged hen receded into silence, and died. Brown had escaped with his booty.

De Soto found himself staring in a dream at the fatal work of his too penetrating intelligence. That it had ruined him was sufficient for the moment. That his own imperfect mind, as he thought, had delivered him up to failure in its worst form, was an ironic jest that cut deeper than mere failure. His memory began to reassert itself. Surely he had disconnected the tube before quitting the laboratory? A clear visual image of the tube as he had left it, flashed on his retina. He rushed to the open window and stared into the darkness. Who had robbed and betrayed him? Crane? De Soto began shouting hoarsely for the watchman who, having seen the light streaming from the window, was already running down the walk to the laboratory.

The watchman as a matter of course began a systematic search. Within a minute he had found Crane.

"All right," the latter remarked dryly, stepping into the light and confronting De Soto. "I guess you've got me. What are you going to do about it?"

His story was already made up, such as it was. In preparation for it he had stripped himself of his protecting gloves, shrouds, hoods and overshoes, and hung them up in the closet before the watchman opened the door. De Soto regarded the suspect somberly before replying.

"How did you get in?" he demanded.

"I was passing here—having a look at things from the outside for old times' sake," Crane grinned, "when I noticed the open window and came in to investigate."

"You came in alone?"

"Presumably. The man who vanished in such a hurry when you unlocked the door must have left the window open. I judge he must be pretty well acquainted with the general layout of this laboratory. Otherwise he couldn't have found his way about in the dark."

De Soto affected to credit this theory.

"You had better tell the proper authorities in the morning," he said, watching Crane's face narrowly.

"Of course, if you think it necessary. I will tell the President of the Board, if you like, as soon as I can get hold of him."

"And you will agree to abide by his decision as to what is to be done?" De Soto suggested with a malicious smile. Crane nodded. "Then," De Soto continued, "I shall have to ask the watchman to search you. A mere formality," he smiled, "so that I may be able to assure the President that you were only safeguarding the interests of the Foundation like a loyal alumnus."

"Rather rough on me, isn't it? What if I object to being searched without a proper warrant?"

"None is necessary. You were trespassing. Search him."

The key was found at once. Although pretty far gone, the game was not yet lost. Crane pretended to take the damning discovery as a matter of course.

"Yours?" De Soto asked.

"Of course."

"Then you had a duplicate?" Receiving no reply, De Soto explained. "To make sure that you would attempt nothing rash after your dismissal yesterday morning, I asked at the office before going home whether you had turned in your keys. They told me you had. This insanity on your part confirms my suspicions. You were discharged, as you doubtless guessed, because I had a strong feeling that you were spying on me. Now, if you will tell me who your confederate is, I shall take no action against you. Who is he?"

"I don't know what you are talking about. That duplicate key must have been in my pockets for weeks."

"It is too new," De Soto pointed out coldly, holding it up for the watchman's inspection. "For the last time, will you tell me who was in here with you?" Crane's obstinate silence seemed to infuriate his inquisitor. "You refuse? Then I shall turn you over to the police."

"What good will that do you? The trustees will believe my story—to avoid a scandal, if for no other reason."

"You think so? Possibly you know them better than I do. Let me think a moment." As if trying to make up his mind, De Soto began pacing back and forth in front of his devil box. At last he appeared to reach a decision. "Close that window, fasten the shutters, and go about your rounds," he directed the watchman. "Lock the door after you. I will be responsible for this man till you look in again."

"Now," he began when they were left alone, "there are no witnesses. We can speak the truth without fear of the consequences. How long had the tube been connected to the box when I came in?"

This tempting invitation to give himself away completely did not appeal to Crane.

"How should I know? Whoever was in here may have

Instinct saved him. Powerless to prevent the groping fingers from finding their mark, Crane ripped the hood from De Soto's head in one convulsive movement with all his strength.

been tinkering with your apparatus for three minutes or three hours."

"So you refuse to talk? Very well; I shan't press you. Amuse yourself till the watchman comes round again. I must see what damage has been done."

TURNING his back on his prey, De Soto strode toward the evil black box. For half a minute Crane did not foresee his intention. Only when De Soto began rapidly making the connections necessary to operate the tube did the truth flash upon him. He was absolutely without protection against whatever fiend De Soto, himself sheathed from head to foot against the rays, might release. The memory of the unnatural cry which Bertha had emitted when Brown—also protected as Crane was at the critical moment—snatched her with him in his flight, roused every instinct of self-preservation in the doomed man. One terminal was already connected. De Soto's nervous fingers were about to close the circuit by connecting the second, when Crane hurled himself upon his inhuman enemy.

The unexpected impact catapulted De Soto against the black box and flung him violently to the concrete floor. Before Crane could fall on him, he had rebounded like an enraged tarantula and leapt to the farther side of the box. Vaulting the box, Crane tried to seize the desperately cool devil sneering into his face. De Soto kept him off easily with one hand, while with the other he felt for the second wire dangling above its binding screw. Crane's wiry strength was no match for the perfect machine of bone, muscle and brain opposing him. The free hand made the connection and began groping for the small button switch that would release twenty million volts to surge into the tube. The operator knew what the consequences to the other must be; the intended victim could not even guess, except that they would be evil. The all but human cries of the hen, and frogs and the guinea pigs seemed to echo again through the laboratory. What would his own cry be like?

Instinct saved him. Powerless to prevent the groping fingers from finding their mark, Crane ripped the hood from De Soto's head in one convulsive movement with all his strength.

"You know, then!" De Soto shouted, making a leap to recover the hood.

"I know you're crazy," Crane jeered, eluding him. He saw his chance and took it. Before De Soto could pounce upon him, he had seized the tube and hurled it to the floor. If not utterly ruined it was out of commission for at least the remainder of that night. Panting from rage, De Soto stood staring in speechless hate at Crane. At last he got his breath.

"You fool," he gasped. "The next ten years in the penitentiary."

"Not if I know it," Crane retorted. "Any jury would let me off, if I told them what you were trying to do to me."

"What was I trying to do?" De Soto demanded with deadly calm.

"Nothing for the good of my health. That's all I know, and it is enough."

"You're insane. I try to find out what damage has been done to my apparatus and you attack me like a madman. Explain that to your jury. Also tell them that you deliberately wrecked my tube. Remember that you were discharged on the suspicion of having tampered with it already. Will you wait for the watchman, or will you come with me to the police station and surrender yourself?"

"Why not compromise? Suppose we talk these things over with the trustees in the morning. After all, you are only the Director, you know. This laboratory isn't your private property. That tube I have just smashed and everything else in here belongs to the Foundation. I'll meet you in the president's office at nine o'clock."

"So the trustees hired you to spy on me?"

"I'd be likely to tell you if they had, wouldn't I? Look at the common sense of our row for a change, and give your imagination a rest. You lost your temper and went clean crazy. Then you tried to give me a dose of something you don't like yourself. It probably wouldn't have killed me. You're not so crazy as that. But it might have done something worse. You know best. I'm willing to go before the trustees or the police, because I shall suggest that they find out exactly what you are trying to do with your short waves."

To Crane's astonishment, De Soto began to rock with laughter.

"I will tell you," he confessed. "The trustees are good business men, but they need educating. I planned to educate them. Now I have changed my mind. They were too fond of money, I thought, and they used my brains to flood the world with trash that only fools would want and only imbeciles pay for. Without me they would still be poor. Now they dream of owning the world. And but for my silly inventions the public would never have dreamed that it could want the stuff it buys. They asked me for rubbish because they could imagine nothing better to want, and I gave it to them with both hands as I would shower idiotic toys on a half-witted child. Like a fool myself I thought it would be a great thing to show all of them the one thing that every rational animal should crave."

"Which is?" Crane interrupted.

"Why should I tell you? Your prying incompetence may have wrecked my work. And you, like all of the bunglers earning their livings here, pass for a man of more than high average intelligence. Could you be educated to want what I planned to give the trustees and all their dupes? No. Nor can any living man or woman. So I shall change my plan and glut you all with what you crave. You deserve nothing better. Tell the president whatever you like. You can go."

"Before I do," Crane replied grimly, "let me tell you something for yourself. I don't understand what you are trying to do, and your high theories pass clean over my head. But I am sure of one thing. You are lying. By dropping your charges against me, you hope to pull the wool over my eyes. Well, you won't. I shall tell the trustees nothing."

De Soto laughed indifferently.

"Here's your key," he said, restoring Crane's duplicate. "Let yourself out. But don't try to come back, ever again. The next time I may have changed my mind."

When Crane was gone, De Soto picked up the tube and examined it critically. The damage could be repaired in two or three days or, if necessary, a new tube might be constructed in five weeks.

"I shall need batteries of these all over the civilized world," he mused. "Then the golden age will dawn."

HE locked up and walked slowly through the cheerless mists of the early morning, thinking gloomily of his bride. She would have waited up all night for him, he guessed, in spite of her assurance that she would not be a drag on him in his work. All of his grandiose projects for the human race had gone glimmering through no direct fault of his own. Any ordinary man would have said "a good job too"; for no such man could have foreseen as clearly as did De Soto the inevitable end of the race from its present state.

Passing a dingy restaurant, he suddenly realized that he was faint from hunger. Not until he had taken a seat at a slovenly table did the full depth of the profound change which had overtaken him in the past three hours register on his consciousness. An untidy waiter in a soiled white apron came to take his order.

"A ham sandwich and a cup of black coffee," he said, without looking up.

"I don't need to ask Crane or anyone else how long that tube was connected," he thought bitterly as he sat sipping his coffee. "Six hours ago this stuff would have stuck in my throat. Now I need it. I'm not well."

Indeed he was not. Idly picking up the greasy menu, he began listlessly reading through the list an item at a time. It did not even occur to him at the moment that this was not his "natural" way of getting the sense out of print. Exasperated by this unaccustomed difficulty in following the meaning of what he read, he finished his coffee, flung down a dollar, and left the place. The cool air refreshed him.

"How stupid," he muttered. "I forgot to bring the frogs and the guinea pigs." His "natural" mentality began to reassert itself. He hurried back to the labora-

tory and got his sack with the four animals. Outwardly they seemed normal. What were they like inside? Only time would show. The prospect of an interesting experiment cheered him up, and he went straight home, to find Alice anxiously waiting for him in the breakfast room. Again a slight lapse of memory warned him that he was unwell.

"What have you in the sack?" she asked, when their greetings were finally concluded.

"Oh," he lied readily, "some new pets. I saw them in the window of a Mexican restaurant and bought them. Two guinea pigs and a pair of frogs."

Alice was enchanted and De Soto, with a curious twinge as of some forgotten instinct stirring within him, noticed that she was charming. When had he been charmed by a girl before? He could not remember. His impersonal mind was, however, still uppermost. Before sitting down to a light breakfast with his bride, he carefully housed his "new" pets, each pair in a separate pen away from all others of the same kind.

"Alice," he began after breakfast, "I have a queer sort of honeymoon to propose. At first I had hoped that we might get away for a week or two, but an awkward turn in my work has put a trip out of the question. Suppose you come down to the laboratory when you have nothing better to do and watch the work? You can bring a book to pass the time when I'm too busy to talk."

She was more pleased than if he had suggested a six months' pleasure trip to the most frivolous playgrounds of Europe. As her husband looked tired, however, after his strenuous night in the laboratory—as she supposed—Alice insisted that he spend at least the morning in bed before they began this most delightful of all honeymoons.

When Crane left the laboratory a free man owing to De Soto's generosity, he went to the nearest telephone booth, learned that Brown had arrived home safely with Bertha, and made a dinner engagement at the doctor's house to talk things over the following evening. Both men were too fagged to think clearly until they had enjoyed a long sleep. Brown made arrangements with a friend to handle his practice and went to bed, determined to sleep ten hours at least. Before turning in, however, he took a pint sample of the bath water which De Soto had left in the tub, wrapped the bottle in several thicknesses of black paper, and left the package with a note for his housekeeper, requesting her to send it, with his card, to Professor Wilkes by special messenger the first thing in the morning. On his card he wrote: "Professor Wilkes. Please examine this sample microscopically at once. The trick to keep it from decomposing is to exclude all light. I will be at home after seven tonight." This time he felt sure of himself.

The professor, duly instructed by Hayashi's micro-photographs of the protozoan fish parasites, would not pour the interesting sample down the sink. Brown's forecast proved right. At four o'clock that afternoon the housekeeper had almost to use force to turn Wilkes away. The doctor, she asserted, had given the strictest orders that he was not to be awakened till five o'clock. The professor left, lugging his heavy brief case, which the housekeeper erroneously mistook for a bootlegger's portmanteau. At six he was back, this time not to be denied admittance. While Brown was shaving and dressing, and apparently taking his own time about both, Wilkes dumped the contents of his bulging brief case on the hastily cleared study table and displayed his astounding evidence—to him it was no less—like an elaborate variety of solitaires played with a dozen packs of cards.

At last Brown entered.

The professor, he decided, had suffered in silence long enough.

"Look at that!" Wilkes exclaimed with a dramatic gesture toward his massive game.

"I don't have to," the doctor retorted. "I saw all that through the miscroscope before you threw away my first sample."

"But they form a perfect series," Wilkes expostulated, "from the lower species to the highest possible, and only the first half dozen of them recorded. Over a hundred and eighty types of protozoa new to science at one swoop! Where did you get them?"

"Where did Hayashi get his?"

"Diseased fish. But that all cleared up months ago. There has never been anything like this in the history of biology. Where did you find these?"

"I made them," Brown replied coolly, not expecting to be believed.

He wasn't.

It developed that Wilkes had spent the day making crude sketches, as fast as his fingers would work, of the curious life—or rather death—in the pint sample which Brown had sent him that morning. Most of the sketches were mere rough outlines. Some, however, exhibited considerable detail. These marked every fifteenth or twentieth place in the long series into which Wilkes had arranged Hayashi's photographs, a few of Brown's sketches, and his own. The effect, as the eye ran rapidly down the entire series, was roughly like that of a motion picture of a rosebud opening out in full bloom. Development of some sort, not mere growth, was evident. The sizes of the creatures depicted remained approximately constant; their complexity, however, increased with beautiful regularity to its climax, reaching a maximum at about two-thirds the total distance from the beginning of the series, and falling steeply down the decline to degenerated simplicity of structure at the end. It was as if a whole race of living things were maturing to its peak before their very eyes, and toppling to its inevitable extinction even as they watched.

"Well," said Brown. "Do you believe now?"

"I will, when you tell me what to believe. I can't doubt my own eyes."

"Nor your own common sense?"

"What has common sense to do with it? We are face to face with a new fact of nature."

"That's what I thought the first night I saw all this happening in a drop of mist. But there is an explanation. It is so simple as to be almost shocking. Haven't you guessed it?"

"More or less hazily. The time scale is all wrong. Impossible, I should say, if—"

"If you hadn't seen it yourself. Excuse me a minute; that must be my friend for dinner. You'll join us, won't you? It's Crane, the X-ray man."

"Does he know anything about all this?" the cautious Wilkes demanded, making a move to secrete his drawings.

"He should, as it was off his skin that I collected my first specimens."

"Introduce me at once!"

On being presented to the excited professor, Crane modestly denied any design in his startling contribution to biology.

"Doctor Brown," he concluded, "will probably have something more exciting to show you soon. By the way, doctor, did you give Bertha a bath after you got her home?"

"Great Scott! I clean forgot the possibility of her being infected as you were. Excuse me a moment. Dinner won't be ready for twenty minutes yet anyway." He dashed out to bathe the unsuspecting Bertha.

LEFT alone with the professor, Crane submitted resignedly to a barrage of questions. How had he ever suspected the existence of these teeming protozoa on his skin? Easily enough, Crane explained, adding that the professor himself would have been in no doubt under the circumstances. Venturing no theory, he went on to state briefly the beginning of the whole story—his thirty hours' exposure, spread over several weeks, to the hard X-rays generated by his two million volt tube, the suddenness with which the intolerable itching began, and the immediate relief when the superficial cause was removed.

"You are positive that your tube generated nothing but hard X-rays? Well," the professor admitted on receiving Crane's fairly confident assurance, "it must have been the prolonged exposure that started the explosion—on your skin, I mean. None of the other biological workers with mere X-rays ever produced such results. Not that they tried, however; although now I fail to see why it never occurred to some of them to do just what you did accidentally. Of course, there would be a delayed, cumulative action under proper doses of the rays spread over a long interval. The sum of all the doses applied in one shot might well be fatal; it certainly would have a different effect from repeated applications of small amounts. Isn't that so, Brown?" he appealed to the doctor who had just reëntered the study.

"Probably not," Brown laughed. "But I confess I did not hear your argument."

Over the dinner table, Wilkes elaborated his not unreasonable theory, letting his soup cool until the diplomatic maid removed it untasted.

Brown did not disagree. In fact he pointed out a similarity between Wilkes' theory and the standard treatment by X-rays, whereby a strong beam that by itself would seriously injure healthy tissue, is split up into ten or more parts all focused on the desired inaccessible spot. However, he was less interested in Wilkes' guess as to what he termed the "explosion" of the protozoa than in what the nature of that explosion itself might be.

The professor was game.

"Don't laugh at me," he began, "and for Heaven's sake never tell any of my colleagues that I ever talked such fantastic nonsense. Well, here goes. It's an old story now how Miller, Dieffenbach and others first managed to produce permanent modifications in certain living flies, that were transmitted for generation after generation to the remote descendants of the original flies. You recall how it was done; the perfectly normal flies were exposed to X-rays, and then carefully segregated and watched while nature took its usual course with flies. They increased and multiplied. But some of the sons and daughters had curious defects of the eyes and other peculiarities from which their parents did not suffer. The sons and daughters were encouraged to mate without having been treated by the rays, as their parents had been. Their offspring inherited all the acquired characteristics. Thus it went for generation after generation; the artificial modifications initially produced by the rays were passed on from father and mother fly to son and daughter fly, precisely as if the first freaks were the natural offspring of their parents —which they were not. It was as remarkable, in its own way, as if a war veteran with only one arm should have a son with only one arm—and the same arm, right or left, and the son in his turn should have a son or daughter with the same defect, and so on for hundreds of generations."

"Don't you want any dinner tonight?" Brown interrupted, as the maid was about to make off with the professor's unviolated chop.

"There's only a salad and cheese with black coffee and crackers after this."

"Dinner? What's dinner in a crisis like this? Evolution has gone mad before my very eyes. Here," he called after the maid, "please bring back my plate. One must eat, even in a lunatic asylum. Now," he continued, firmly spearing his chop, "consider what all this means. Take the human race, for instance. We're mammals; you admit that. And what are mammals, ultimately, but an offshot of the reptiles? How did they shoot off in the first place?"

"Don't ask me," Crane muttered guiltily, as the professor fixed him with a flashing eye. "Brown ought to know."

"He ought to. But does he? No? Well neither do I," Wilkes exclaimed, evidently well satisfied with himself. "But I have a theory—no, not now. Later, when we get to the bottom of your new protozoa. What do the biologists tell us?"

"You ought to know," Brown suggested. "Don't you make your living at biology?"

"I do know!"

"The mammals sprang from the reptiles by a mutation—a sudden change of species."

"Rot," Crane commented tersely and incisively, with the superior wisdom of the physicist accustomed to manufacturing theories in the evening to be thrown overboard in the morning.

To his great disgust, Wilkes unexpectedly agreed with him.

"Of course it is rot," Wilkes assented. "I know even better than you that mutations explain nothing; they merely give a fancy name to the fact we are trying to understand. Evolution by jumps, instead of slow, continuous growth—there's another statement of the same thing. What I want to know," he exclaimed, bringing his fist down on the table, "is what causes these jumps. The physical reason—not a restatement of the problem. Something suddenly took place in the germ cells of the reptiles, and they brought forth strange creatures—no stranger than those artificial flies with the queer eyes—that later evolved into your ancestors and mine. Tell me that, and I'll rule the world!"

"Shall we tell him?" Crane asked with a dry smile.

"I haven't the heart," Brown replied in the same vein.

"He might pour us all down his kitchen sink."

The debate lasted well into the night, and, like most battles with words, settled nothing. The real debate had not yet begun. Things, tangible and real, were presently to play their part in the argument. Nevertheless, the trio did succeed in forming a not unreasonable guess as to what the professor's interesting series of drawings signified. At two o'clock in the morning, when the little party broke up, they agreed to stick to the problem until they could control the protozoa at will. The professor's parting cry of triumph was to the effect that he now held the key to evolution in his hand.

"Better throw it away, then," Crane remarked. "I got caught this morning with a key that I had no business having, and I'm afraid I'm in for a peck of trouble."

On the way out, after Wilkes had gone, he briefly told the doctor of De Soto's truce.

"I don't like it," Brown remarked. "Especially his attempt to force you to tell him how long his tube had been running when he came in. De Soto has been fooling with something he only half understands. I guess that we caught him in his own trap."

"If so, we had better shoot him before he breaks out again. He's a bad egg. Good night; see you tomorrow."

Bertha's Brood

SOME three weeks after Brown's dinner party, a puzzled electrical engineer in New York sat reading and re-reading the most extraordinary letter that any human being ever received. The engineer was the once celebrated Andrew Williams whose early patents on high-power transmission remade the wholesale electrical industry and founded the colossal fortune of the now defunct Power Transmission Corporation—P. T. C. as it was known in its prime.

Vice-President Williams' brain had made P. T. C. both possible and prosperous; Miguel De Soto's better brain had made it both impossible and bankrupt. The decline of P. T. C. began when the Erickson crowd captured all long distance, high tension power projects with their new principle of electrical insulation. From decline to ruin was little more than one stride, and P. T. C. took it. Overnight, when the first great advertising campaign of the Erickson began to bear plums for its sponsors, and thistles for its competitors, the stock of P. T.C. fell from 180 dollars a share to 14 dollars and 50 cents. It was a washout, and the unfortunate corporation was drowned. All that remained was to wind up the affairs of the corporation—with the help of the somewhat unsympathetic courts—and start all over again. The first would take from six months to a year. What the reorganized P.T.C. should manufacture was a mystery. Williams rather favored radio sets, but the rapidity with which the Erickson Foundation relegated successive improvements in that field to the National Museum of Arts and Sciences, made the Vice-President's associates pessimistic and chary. They for the most part advised a complete clean-up of the business and a general retirement on the wreckage for all its officers.

The letter which caused Williams such bewildered astonishment was thirty pages long, typed in single space, and anonymous. No water-mark or other identification betrayed where the paper might have been purchased. The paper itself was rather peculiar for a business letter. It was thin, light brown wrapping paper, such as is commonly used in department stores for doing up parcels, cut to the standard typewriter size. The cutting apparently had been done with a sharp penknife. Although the typescript was plainly legible, the marks of numerous erasures on every page indicated that whoever had operated the machine was no skilled typist. The general appearance suggested that the entire thirty pages had been painfully pecked out a letter at a time. As a last, significant detail, the type had all the earmarks of that from a practically new typewriter.

Most sensible persons consign anonymous letters to the fire, if one is handy; if not, they tear the letter into small pieces and entrust it to the wastebasket. Williams, on looking for the signature and finding none, was tempted to be sensible. The opening sentence of the letter arrested his attention, however, and he read it breathlessly to the end.

"Sir," the letter began, "I herewith present you with the infallible means for recovering all of your recent losses and regaining your monopoly over the power transmission industry at no cost to yourself."

The letter concluded with the suggestion that Vice-President Williams at once patent everything of value in the detailed specifications.

"My purposes," the anonymous writer asserted in a postscript, "are purely humanitarian and educational."

For the twentieth time Williams scrutinized the large Manila envelope in which the letter had come—unfolded. Only his own name, with the words "Personal and Important" added, all in the same kind of typing as that of the letter, offered any clue to the sender. Obviously no detective could hope to trace the letter from these data alone. Williams rang for his secretary.

"When was this envelope delivered?"

"I couldn't say. The office boy laid it on my desk at eight o'clock this morning with the rest of the mail from our own box."

The office boy remembered taking the large envelope from the mailbox with the rest. There the clues ended. The Vice President again summoned his secretary.

"If anyone asks for me, tell him I have gone to Washington, D. C. I'll leave my hotel address at the information desk in the U. S. Patent Office in case of an emergency. Don't expect me back for a week."

Williams had been a great inventor in his younger days, and he knew that noble game from alpha to omega. Unless some crank were hoaxing him by passing off as a free gift the work of another man already ready to be patented, but not yet divulged to the general public, Williams felt confident that he now held the world's tail in his right hand and a sharp ox-goad in his left. And how he would make the brute sweat and plod for him when once he started cultivating his rich opportunities! Provided the genius who had invented this irresistible goad had not yet filed the necessary papers, Williams cared not a damn for any moral rights the man might have in his masterpiece; the legal technicalities alone troubled him. Could he beat the cracked genius to the patent office before the idiot repented of his insane generosity for "purposes purely humanitarian and educational"? What wouldn't the rejuvenated P. T. C. do to the blustering, overbearing Erickson with this pointed stick in its capable hand?

From gloating over his anticipated revenge on his unscrupulous rivals, Williams, gazing absently over the fleeting housetops from his seat in the passenger plane, soon fell to speculating on his faithful associates and superiors at the flattened P. T. C. Who among them all had greatly concerned himself with the Vice President's comparative ruin? Not one; their only concern was to salvage at least the rind of their own bacon from the general mess. He, they intimated, was no longer useful to them. Therefore he might go to the devil as fast as he liked. Williams began to smile. His friends were no longer of interest to him. Could they raise capital to finance the goad? They could not. He, on the other hand, with an argument like this patent—which he now felt sure of obtaining—could persuade all the bulls and bears in Wall Street to dance jigs on their heads for his pleasure.

Williams, in short, was not one of those rare souls whom prosperity does not corrode. Had he but guessed that his anonymous benefactor intended by his gift that the recipient *should* go to the devil, as the P. T. C. had already hinted, his smile might have been less confident. The joke after all might turn out to be on him, as a mere pawn in the humanitarian and educational purpose of the donor.

IT must have been the very morning that Williams rushed off to the U. S. Patent Office that De Soto rose much earlier than usual and, while Alice still slept, stole out to the back garden to inspect his menagerie of pets. For the past three or four days one of the guinea pigs and both of the frogs which he had taken to the laboratory had been acting strangely. In no case were their actions those of animals in normal distress. Each seemed to sense in some mysterious way the nature of the unseemly jest which chance —or design—had played upon it, and each of the hap-

less creatures appeared to be anticipating with an unnatural dread the miracle which was almost upon it. The natural rhythm of its vital functions had been violated.

Walking slowly over to the cage where the ailing guinea pig lay, De Soto took a firm grip on himself.

"In five seconds now," he thought, with a rueful laugh, "I shall know how long that blundering fool Crane had left the tube running."

A sack had been laid over the top slats of the cage, as the light seemed to irritate the prospective mother. With a firm hand De Soto raised the sack and peered down into the cage. The miracle had happened in the night. In one corner of the cage the wretched mother cowered in unnatural fright, panting with terror. The eyes of the stricken animal, already clouding at the approach of death, were fixed on the farther corner, opposite her own, where lay the four things to which she had given life against her will. De Soto had half expected a shock. But even he was unprepared for what he saw. He replaced the sack, strode to the garage, and fetched a shovel and a bottle of chloroform which he had concealed in the tool cabinet a week before—when the guinea pig first showed signs of distress. In ten minutes he had done what was necessary.

"Now for the other," he muttered, going toward the pen where the suspected frogs lived. Again the miracle had happened. In this instance there were no unnatural young. Frogs propagate from eggs. Therein this pair had an advantage over the guinea pig. What their offspring might be was yet undetermined. De Soto decided not to wait for outraged nature to reveal the unknown. The two repulsive monsters, whose grotesquely budded bodies made his blood run cold, were sufficient. Once more he used the chloroform and the shovel.

"I know now how long the tube was running," he thought. Involuntarily he began feeling his muscles and running his fingers lightly over his skin to detect the incipient nodules. "Am I to go like the frogs," he muttered; "or are only my germ cells affected? One or the other; but which? Perhaps both."

He walked slowly back to the garage to put away the shovel. The half bottle of chloroform being of no further use, he intended emptying it and throwing the empty bottle into the rubbish can. Drawing the cork from the bottle he started to pour out the remaining chloroform, and paused irresolutely.

"I wish I knew," he muttered, staring moodily up at the window of his bedroom. His bride of three weeks was still asleep in that room.

Whatever may be a man's abstract theories about humanity as a whole, three weeks of marriage, and especially the first three, will modify them in detail. Moreover, De Soto had undergone a profound physical change the first night of his married life; he was no longer, mentally at any rate, the man whom Alice had married that happy afternoon. Among other discoveries of those three weeks, De Soto learned that he was beginning to love his bride in the human and humane way of ordinary men whom, three weeks before, he had despised. "I wish I knew," he repeated, still undecided. A vivid image of what he had seen in the cage with the dying guinea pig flashed into his mind. Hesitating no longer, he recorked the bottle, slipped it under his coat, and stole into the house. In the kitchen he selected a clean dish towel and stuffed it into a coat pocket. Then he crept upstairs.

Alice was still sleeping, her bare arms gracefully disposed on the silken sheet, and her ruddy lips slightly parted like a child's. She was smiling in her sleep as De Soto stealthily extracted the cork from the chloroform bottle and drew the dish towel from his pocket. For perhaps five seconds De Soto stood motionless, staring at her beautiful face with something like dawning compassion in his eyes. Then he began pouring the chloroform, a few drops at a time, upon the towel. As the sweet, sickly odor flowed slowly down on the rosy face, the sleeper stirred slightly and murmured a word that sounded like her husband's name. Although his hand shook, De Soto did not desist.

At last the towel was saturated, and De Soto laid the bottle noiselessly on the floor. He straightened up, his muscles stiffened for the inevitable struggle.

"Where are those flowers?" the sleeper murmured, now half awake. "Miguel!" Her eyes opened fully, if drowsily. Instantly he thrust the towel under his coat. "What is it?" she asked, staring up. "You got up early?"

"Yes," he replied slowly. "I thought I smelt gas escaping from the refrigerating plant. Do you get it?"

"I thought I was dreamng of acres of red roses. Now that you mention it, I do notice a sweetish smell. Have you been downstairs to look?"

"No, I was just going when you woke up. Don't worry; I'm sure it's nothing serious. I'll open the dressing-room doors and let it blow out. Where are my slippers? Oh, here they are."

Bending down quickly he managed to secrete the bottle under his coat while pretending to put on his slippers.

"Hadn't you better call the servants?" she suggested as he flung open the doors of the dressing rooms.

"No," he laughed. "It's still nearly three quarters of an hour ahead of their usual time. You forget that I'm a sort of glorified tinker myself. I'll soon fix whatever is wrong. Now you take another nap; I may as well stay up now that I'm dressed."

"If she hadn't opened her eyes," he muttered as he descended the back stairs to the kitchen, "I could have done it. Now I never can. There must be some other way of neutralizing it in her—if it has happened. Why can't I think clearly as I used to think? Well, I can only try. This blind fighting in the dark——"

Although De Soto did not know it, and indeed was incapable of realizing the fact, he not only was changed but was also in the merciless grip of a slow but incessant transformation. He was like a robust man of splendid intellect suddenly assailed by an insidious and incurable disease of the bodily functions and mental faculties. Such a man, in the first, gradual stages of his decay, perceives nothing wrong with himself, and attributes his slackening grip to an inexplicable conspiracy of outward circumstances. The problems he could have attacked and solved in his prime baffle him in his decline because—according to his rationalization of his disease—they are more abstruse than any to which he is accustomed. His friends, pitying him in his decay, do not disillusion him, and he goes to his grave believing that the world has passed him in its ceaseless progress, whereas it is his own rapid retrogression that has shot the world ahead beyond his ken.

THE first three weeks of Alice's honeymoon had passed in a happy dream, at least for her. Every morning she accompanied her husband to his laboratory and passed the day pretending to read but actually following his every movement with devoted eyes. She proved herself an ideal companion for a desperately busy man, talking only when he showed an inclination for talk. When lunch time passed unobserved by her husband, she would slip out to the nearest restaurant, to return presently with an appetizing meal, which she spread out unobtrusively where he might notice it.

Even in the first week Alice observed a curious change in the man she worshiped. Mistakenly, she imagined that he was working too hard. All the staff had told her such wonderful tales of the lightning sureness of his mind, that it puzzled her to see him frequently baffled. Unaware that she was watching his slightest movement, De Soto would often sit for minutes at a time, turning some piece of apparatus over and over in his hands, as if in doubt concerning its use, although he had made it himself. These lapses became more frequent as the construction of the new tube progressed, until by the end of the third week practically half a day would be wasted in futile scribbling or blundersome manipulations. Alice became alarmed, and begged him to take a rest, if only for a week.

His reply was a stare of unfeigned surprise. Wasn't he getting along famously? Why interrupt the work with the end in sight? With a chill feeling about her heart, Alice realized that her husband was headed straight for a nervous breakdown, and was so far gone that he failed to appreciate his illness.

At length Alice could stand the suspense no longer. On the morning of the day when De Soto had been tempted to destroy her, she asked his permission to invite an old friend to dinner that evening.

"Of course," he agreed readily. "Who is it?"

"Doctor Brown. I haven't seen him since I was married, and he was so good to father and me."

"Why not invite your father, too? It must be pretty lonely living at a hotel."

She hugged him in an ecstasy of happiness. De Soto, for his part, felt an unaccustomed uneasiness at the prospect of a meeting with Brown. Would the doctor inadvertently refer to the strange disorder of which De Soto had never told his wife? He must see Brown first and warn him to be silent. Then a disturbing question echoed through his mind: Why must Brown be warned? Surely there was nothing disgraceful in a man keeping a passing sickness from his wife? Ah; De Soto remembered—but not clearly. It mattered nothing whether Alice learned of his itching skin, now permanently cured. No; but she must never hear of what happened in the laboratory that night when he caught Crane trying to work his tube. A worried frown darkened his face. Exactly what had happened that night? The main events stood out fairly clearly, but the details were blurred almost beyond recall.

"Alice," he said, "I guess I'll take a layoff next week, after I finish my tube. It will be done this morning, I hope."

"Oh, how jolly! That's just what I've wanted you to do ever since we were married. Only," she added in a low voice, her eyes shining with unshed tears, "you seemed to think so much of your work that I never dared to hint."

For some minutes he remained coldly silent. Had she displeased him by her outburst of affection? Alice glanced shyly at his face. Why was he so withdrawn into himself, so far away, in seeming, from her and the world she knew? At length he spoke, more to himself than to her.

"Something happened a long time ago, when, I can't recall. But it was so far away in time that it seems like a dream from another life. What was it? Why can't I remember? And why should I always seem to be on the point of meeting someone whose existence I have forgotten?"

"Never mind," she said soothingly; "if it is anything that you should remember, it will all come back after you have had a real rest."

As De Soto had prophesied, the new tube was finished and ready for operation that morning. Shortly before noon it was connected to the twenty million volt box, all but the last terminal which would close the circuit and start the generation of the rays. Alice at the time was pretending to read. Apparently she was absorbed in her story. De Soto furtively studied her profile a full minute and then went to the closet where the insulating suits were stored. Presently he emerged, clad from head to foot in a double sheath of the transparent armor. Alice put aside her book and laughed.

"How funny you look in those things! I never saw you dressed up that way before. What's it for?"

"Oh, just for a fussy precaution," he replied lightly. "You see, there might be a faulty connection that would cause a spark. This makes everything perfectly safe, no matter if the whole box blows up. But it won't, so you needn't worry. You stay over there."

He did not act in haste. As dispassionately as he could, he weighed the probable consequences of what he was about to do. His penetrating insight into the laws of nature was already clouding. Like the ordinary man of genius he was now reduced to weighing probabilities and selecting what appeared the least undesirable. Involuntarily shutting his eyes he quickly turned on the full twenty million volts for an instant, and then off again, by two quick twists of the screw switch.

The shriek that Alice emitted sounded scarcely human. Although De Soto had expected it, his blood froze. Tearing off his hood he ran to her. She had not fainted, but stood staring at him like a shadow in a dream, her eyes dark with terror.

"What was it?" he cried, as if he did not know.

"Are you hurt?" she gasped.

"No. Don't you see? Why did you scream like that?"

"I don't know. For a second I thought you were killed. Then something seemed to tear me to pieces—inside, here."

"Imagination," he boldly reassured her. "You feel all right now?"

"I suppose so," she admitted doubtfully. "But I feel—oh, how can I express it? Changed." Then, after a pause she added in a voice which he scarcely heard,

"Defiled and degraded."

"Nerves, Alice. You imagined that what I was doing was terribly dangerous. Sorry I stirred you up by putting on all this ridiculous fancy dress. When I turned on the current you thought I was killed. Come on, let's go out to lunch and get some fresh air."

Still dazed, she sat down and waited until he removed his protective armor and put on his coat. What had happened to her? Merely an attack of nerves, probably, as he asserted. Yet she felt inhumanly unclean. By a curious coincidence the warning which Crane had thrust upon her recurred now with startling clarity. As if her old friend were standing before her, she saw his face with her mind's eye and heard his disturbing prophecy: "If you marry him you will kill yourself to be rid of him." What did Crane know of her husband that she did not? Surely nothing, she concluded reassuringly as her common sense regained the control of her subconscious mind. Then, from her deepest nature, just as her husband reappeared, a despairing instinct whispered, "Destroy yourself before it is too late." But this warning, like Crane's, yielded to gross common sense, and she joined her husband with a smile.

"I'm all right now," she said, and believed it.

On the way to lunch she telephoned to her father and Doctor Brown, inviting them to dinner that evening. Both accepted eagerly, especially Kent, who was longing for a sight of his daughter. Brown looked forward to the evening with mixed feelings. To sit down at the dinner table with a man whom you distrust and whom you have wronged is likely to be rather trying.

THAT evening Kent arrived first, three-quarters of an hour ahead of time. After a decently cordial greeting, De Soto retired to inspect his pets, leaving father and daughter together to discuss him to their hearts' content. To the happy father's uncritical eyes Alice seemed the picture of health and youthful happiness. Kent himself was in high spirits. For a week he had been employed as booster-in-chief for a go-getter real estate firm, and was enjoying his work tremendously. As the time for Brown's arrival drew near, Alice hinted that she would like to see the doctor alone for a few minutes. "About Miguel," she explained. "He has been overworking. Suppose you go out and ask him to show you his pets? He's crazy over them, and will let no one else have any of the care of them." The bell rang just as Kent made his escape.

"Well, Alice," the doctor greeted her, "this is just like old times. How is everything with you?"

"I'm ridiculously happy," she laughed, "except for one thing. Won't you drop Miguel a hint that he must take a long rest?"

"From what the men in the laboratory tell me, your husband isn't given to long rests. Still, I shall do my best, if you wish it. What seems to be the trouble?"

"First, let me tell you that I spend my days in his laboratory, reading and watching him work. He is usually so absorbed that he doesn't know I'm there. So I can't help seeing him as he really is. And I have noticed that he is dreadfully tired, although he does not know it. For one thing, he has long lapses of memory."

"I'll speak to him," Brown replied decisively. "We can't afford to have him unwell or you unhappy. What about yourself? Feeling pretty fine?"

The doctor, eyeing her keenly, noted the slight hesitation and the flush before she replied.

"Never felt better in my life," she began. An overpowering wish to confide in her friend suddenly stopped her. Almost before she realized what she was doing, she had told him of the excruciating momentary agony she had experienced that morning in the laboratory. "It was probably just an attack of nerves, wasn't it?"

"Tell me exactly what happened."

She went into detail, describing the whole incident and De Soto's explanation. Brown, of course, noticed the flaming fact that Alice was unprotected while her husband neglected no precaution to shield himself against possible danger. Like a good doctor, Brown's face betrayed no concern. Nevertheless he was revolving in his mind a black question that chilled him to the bone. Had De Soto merely blundered, or had he intentionally left Alice unprotected? And if the latter, what could be his object? For Brown vividly remembered certain cries which he and Crane had heard—those of a helpless animal. What would a human being suffer in similar circumstances? Had Alice indeed been subjected to the same treatment as Bertha?

"Miguel was right, wasn't he?" she concluded. "There couldn't have been a leaky connection, or we should both have been killed. It was just my nerves."

"Not a doubt of it. You take my advice and keep out of the laboratory after this. The next time something real might happen. By the way, you have no tingling or itching of the skin?"

"Not a trace."

"Then that settles it," the doctor assured her. From his tone she inferred that he dismissed the flash of pain as a fiction of her imagination. That of course was precisely what Brown meant her to believe. The point, however, which her healthy skin settled in the doctor's mind was more important. She had taken the full bolt of the rays generated by twenty million volts, if indeed she had been exposed to any, and not the greatly softer rays given off at two million volts' pressure. Kent and De Soto joined them just as dinner was announced.

During the meal Brown concentrated his attention on De Soto, leaving Kent and Alice to gossip of old times at the Foundation. Poor Kent, in spite of his pride in his new job, longed for the fleshpots of his lost dictatorship. A jealous note crept into his voice, and the doctor overheard him surreptitiously expressing a hopeful belief that the Erickson would come to a bad end. They were too grasping, he declared, caring nothing for the common decencies of reputable business competition. De Soto overheard the remark.

"I agree," he said quietly. "The trustees need educating."

"In what?" Brown asked.

"Human decency, if there is such a thing."

"Miguel!" Alice murmured reproachfully. "You know you don't mean that."

"No, I meant more." His voice rose. "The whole human race needs educating—in the same way. Why, I remember when I was a young man—."

"You can't be so very ancient now," Brown interrupted, with a curious glance at his host's excited face.

It was an unfortunate remark. Something snapped in De Soto's brain. Flinging down his napkin, he pushed back his chair and leapt to his feet, his black eyes blazing. Luckily no servant was present at the moment. Speaking with great rapidity and in a low voice vibrant with passion he delivered a flaming tirade against everything human. Alice watched his face with something akin to terror in her eyes; Kent sat open-mouthed and blank; Brown followed every word with rigid attention. An alienist, knowing nothing of the facts, would have pronounced De Soto incurably insane. The very logic of his fantastic indictment was its most damning feature. Brown was not an alienist. But he had the average high grade physicians' knowledge of the earmarks of insanity.

Silently admitting to himself that any specialist on mental disorders would be fully justified in declaring De Soto insane, he nevertheless felt confident that the raving man was sane with a terrible sanity denied most human beings. The outburst lasted but a brief two minutes. It was like a terrific stab of lightning on a sultry midsummer night. Breathing heavily, De Soto resumed his seat and began crumbling a piece of bread.

Brown broke the sulphurous silence. With a significant glance at Alice, which she interpreted correctly by kicking her father under the table, the doctor began a cool cross-examination of De Soto.

"Your theories of human society are interesting but academic. How can you put them into action?"

"Oh," De Soto laughed, apparently himself once more, "I can't. My theories are just theories, nothing more. I thought they might amuse you."

"They did. You seriously think it would be possible to educate human beings out of their greed for what you call trash by stuffing them with so much of it that they would rebel?"

"Not exactly. That would be merely the first step."

"And the second?"

"Give them different tastes. Even that cook and waiter had rudimentary minds that the right process could work on."

"What cook and waiter?" Brown demanded quietly.

"I just told you."

Before continuing his examination, Brown shot Alice a warning glance.

"Of course," he said. "I forgot. Let us suppose you have made the rest of us disgusted with the things we like. Would you give us something better?"

"I was going to. But——"

"But what?"

"Oh, what's the use of theorizing? Leave it to history."

BROWN changed his tactics. One or two statements of fact which De Soto had let fall in his tirade needed attention.

"As you say, history will attend to our descendants—unless we find some way of doing it ourselves. Another thing you said is more interesting, I imagine, to all of us. You have always been rather a mystery man to most of us, Mr. De Soto. We never knew that you spent some of your earlier years in the United States."

"Neither did I," De Soto retorted with an amazed stare. "Who said I did?"

"My mistake," Brown apologized. "But it seemed to me that the conditions you mentioned could exist only in the United States."

"They exist everywhere."

"In the Argentine, for instance?"

"The Argentine?" the puzzled bewilderment on De Soto's face showed plainly that he did not perceive the drift of Brown's question.

"I just used it as an example of 'everywhere'," Brown explained.

It was clear that De Soto either was lying or that he was so ill that he remembered nothing of his early life. Kent was about to break in when Alice silenced him with a warning look. She, too, had believed that De Soto spent his youth in Buenos Aires. Poor Miguel was indeed unwell. She hurriedly turned the conversation into less personal channels.

The distressing party broke up early. At a hint from Alice, Kent left immediately after dinner, saying he had to be up very early to keep a distant engagement. Alice followed him to the door, leaving Brown alone with her husband. She did not hurry back. The doctor caught her expressive glance as she went out.

"Mr. De Soto," he began as soon as they were alone, "you are too valuable to society to overtax your strength the way you do. If you are not to squander all your talents in a silly nervous breakdown, you had better take a long rest."

"I am planning to," he replied. "My work is practically done."

"Not all of it, surely?" the doctor suggested. "That's no state of mind for a young fellow like you."

De Soto flared up again.

"What do you know of my age?"

"Keep cool. Don't fly into rages over trifles. As a matter of fact I don't know your age, but I should guess it to be about thirty."

"Thirty?" De Soto echoed in astonishment. "Why I was born—"

"When?" the doctor prompted. Receiving only a puzzled look, he continued. "You have forgotten that, too. Your wife is right. Take a lay-off."

Alice reëntered, and Brown took his departure. She saw him into the hall.

"Your husband will be all right," he reassured her, "if he lets up a bit. If there is anything I can do for you at any time, please let me know."

The doctor walked thoughtfully home, wondering what sort of a man De Soto was at bottom. Was Crane right in his estimate, and if so, in what particular way was De Soto a thoroughly bad egg? Brown half doubted his friend's opinion after seeing the suspect in action. More likely the brilliant young inventor was merely eccentric. But was he also a bungler in practical details? That was the hard question. Its answer would decide whether De Soto was guilty or not guilty in regard to the mishap to Alice.

As he passed along the south wall of his garden, Brown heard a prodigious fuss from the hens in the patio. At this hour of the evening they should all have been roosting and silent. That they were active and excited in the dark, in flagrant contradiction of the normal habits of the fowls, presaged some event of unnatural significance.

"Bertha's laid another," he exclaimed, hurrying into the house to fetch his flashlight.

Since her involuntary adventure in the laboratory, Bertha had set out to beat the world's record in laying eggs. She had already broken the record in the matter of numbers. The size, however, of her efforts disqualified her. None of her numerous eggs had been over a fifth the size of a normal hen's egg. The shells, too, of these "pigeon eggs," as Brown called them, were remarkably deficient in lime. Some were little more than sacs of flexible white skin, like the inner sheath of an ordinary egg. Naturally the doctor had watched his phenomenal hen as closely as if she were his wealthiest patient. She had laid no fewer than sixty-three of the dwarf eggs. She, herself, seemed quite satisfied, as she sat almost constantly on the whole nestful.

The henyard was in a wild commotion. The doctor's flashlight revealed an excited dozen or so hens pecking viciously at some dark red object. This proved to be Bertha, her feathers drenched in her own blood. She was dead, but still warm. Brown shooed the enraged hens away from the body and placed it under an empty coop. Then he investigated.

From the evidence it appeared that Bertha had died defending her brood. Eighteen of the eggs had hatched. Thinking for a moment that he had gone insane, the doctor stared down at the dead hen's living offspring writhing over the unhatched eggs. Then he scooped the lot, eggs and offspring, into his hat, hurried back to the house and telephoned to Wilkes and Crane.

"Come over at once. I have some things millions of years old to show you, and they're alive."

He turned one of the crawlers over on its back with a pencil.

"No wonder the other hens pecked her to death. I would have done the same in their case."

CHAPTER X

Cat and Mouse

IN scientific circles there are several semi-human periodicals which contain, in addition to technical papers, brief personal notes concerning the scientists themselves. For example, if Professor X. is appointed to the vacancy created by the death or resignation of Doctor Y., the fact is stated, so that the scientific friends of Professor X. may know where to address him.

Crane, of course, took advantage of these free employment agencies when De Soto discharged him, and sent in a note to each, saying that he was no longer connected with the Erickson Foundation. He hoped to receive at least one tempting offer before his bonus ran out. The hope was not extravagant. Before De Soto's brilliance had eclipsed that of all inventors in his own many fields combined, Crane was justly rated as the best ray expert in the country. Hence, should some desperate firm attempt to hold its own small corner of the field against the Erickson, Crane was their most promising prospect, as De Soto seemed satisfied where he was. In fact several firms were already considering Crane when the official news of his "resignation" was published. They knew that his nose was out of joint at the Erickson and hoped to get him cheap. In this they were disappointed. Other attractions held Crane jobless to his post.

At last, five weeks after the evening when Wilkes and he responded to Brown's excited telephone call, Crane received a three hundred word telegram, signed Andrew Williams, President Universal Power Transmission Company, offering him a royal salary as chief consulting physicist. The telegram, while avoiding all details of technical value, stated that the new company had been formed to exploit a revolutionary invention for the transmission of electric energy. This much occupied less than twenty words. The remainder of the telegram was chiefly a roll call of the wealthiest business men in America. These, Williams stated, were floating the company on their own money. That list of names would have impressed the Sphynx.

"Hang it," Crane muttered, "I can't turn down an offer like this and keep my self-respect. I shall have to accept, just as Wilkes and Brown are getting to the most exciting point."

Before telegraphing his acceptance, he called on the president of the Erickson trustees. This time the president bustled out in person to greet his calier.

"Come into my office," he begged. "Well," he asked when they were alone, "you have found something about the subject which we talked of two months ago?"

"Nothing of commercial value," Crane admitted.

"Your opinion of Mr. De Soto is the same?"

"Yes. Only more so. I can't tell you why. But I am beginning to get a definite line on him. By the way, did he ever tell you that I spent an hour in his laboratory without his consent?" The president shook his head. "I thought he wouldn't. Well, what I came about is this." He handed the president the telegram from Williams. "It does not say confidential," he remarked; "so there is no harm in your seeing it."

The president read it through slowly twice. Its commercial implications for the Erickson were obvious.

"You will accept, of course?" said the president. Crane pointed out that he would be a fool to refuse. "I agree," said the president. "You will not forget us, I hope? We were not ungenerous to you."

"What can I do that your own staff can't? This invention must have been patented before the company was formed. So anyone can find out by going to the Patent Office exactly what it is. Why not send De Soto to Washington at once? Even if the patents are ironclad to the ordinary man, he will find a way through them."

"Do you mind if I show him this telegram?"

"I guess it's ethical enough. Go ahead."

De Soto was not in his laboratory. On telephoning

Thinking for a moment he had gone insane, the doctor stared down at the dead hen's living offspring writhing over the unhatched eggs.

to his house, the president learned from Alice that her husband was not at home.

"Can you tell me where I could get in touch with him, Mrs. De Soto? This is a most urgent matter; otherwise I should not dream of troubling you."

"He had an appointment with Doctor Brown this morning at eleven. Probably he is at the doctor's office now."

"Not unwell, I trust?"

"Oh, no. It was just about a personal matter."

De Soto was located at Brown's office. He promised to be at the Foundation within half an hour. While waiting for him to appear, the president kept delicately reminding Crane of the great debt of gratitude, which he, Crane, as an altruistic scientist, must feel that he owed the Erickson Foundation. Crane had difficulty in smothering his grins. The game was too obvious.

When De Soto entered, he nodded curtly to Crane, and proceeded to business.

"What is it?" he demanded.

"Doctor Crane advises that I show you this telegram, Mr. De Soto."

De Soto was almost his "old" self for a few seconds. He took in the sense of the long telegram at a glance.

"Electrical energy?" he questioned with a short, contemptuous laugh. "So that's the sort of thing these great financiers gamble on, is it? Serve them right if they get cleaned out. I have neither sympathy nor patience with them."

"But," the president expostulated, "all of our own business is built up on electrical energy in some form or another. What is to become of our insulation if these people have something that beats it? And our radio valves—everything we manufacture. Don't you see how serious this may be for us?"

"No. It doesn't matter what they do."

"You know what they have?"

"I do not," De Soto snapped. "And what is more, I don't care. If I did wish to learn, I should telegraph at once to Washington for a copy of the patents."

"Hadn't I better do so?"

"Why? I can beat anything they do."

"Really, Mr. De Soto," the president demurred, "although we all have the utmost confidence in your genius, I must say that your attitude strikes me as a little too —how shall I say it?"

"Call it cocksure, if you like. I shan't mind, because I do know what I am talking about."

"But consider this list of names for a minute. Would men of such standing in the business world put their own money into a scheme that wasn't gilt-edged?"

"They would, and they have, because they are one and all uneducated fools."

"I must protest! These men——"

"Do so. And so shall I. In fact I have already protested in the only way that counts. I call a financier uneducated when he puts a lot of his money into a scheme that he does not *know* will win. As I said, I can beat anything they do, and I don't mind if Crane tells them so. They won't believe it."

"BUT what are we to do?"

"Nothing, for the present. Wait until they are in up to their necks. Then I will finish their education by shoving their heads under. It is either this or nothing. If they are right, we are ruined; if I am right, they are ruined. We can't compete with them on their terms—if they have what they think they have. And neither can they compete with me, if I have what I think I have. Our policy is plain—wait."

"May I suggest a third possibility?" Crane interjected, as the president was about to reply. "Mr. De Soto says either they or we shall be ruined. We might properly consider the case in which neither is ruined."

"Impossible," De Soto snapped.

"All right," Crane retorted. "There is only the fourth thing possible."

"There is no fourth," the president objected.

"Oh, yes, there is. There are four possibilities, and only four. We've discussed three. The fourth is the least pleasant of the lot. Both we and the other crowd might be ruined."

"But how?" the president demanded, missing the ominous flash of De Soto's eyes which Crane observed. "Industry must have electrical energy. How can they lose, provided we also lose?"

"I'm sure I don't know," Crane admitted. "I'm not a great inventor."

And there the matter rested. Forced to accede to De Soto's policy of inaction because he could devise no better, the president delivered the fortunes of the Foundation into its director's capable hands. Crane left them arguing and went out to wire his acceptance. His sympathies were with the president; De Soto seemed entirely too sure of himself for comfort.

Before taking the train that night, Crane went to bid the doctor goodbye.

"I hate to rush off and leave you and Wilkes just as things promise to get exciting. But what can I do? Offers like this don't come in every mail."

"It's the only sensible thing to do," Brown agreed heartily. "I'm glad you had time to drop in. There is a new development." His face darkened. "Professionally, I have no right to tell you. But in this case we are beyond ethics. I shall also tell Wilkes. We three are the doctors in this case. What I tell you must go no farther."

"I promise."

"Alice called me in this morning. She is to have a child."

"Good God! What will you do?"

"Take care of her, of course. She asked me to."

"But——"

"I know. Or at least I don't know. Neither does her husband. He came to see me this morning, after I got back from visiting her. I believe he has blundered and tried to correct his mistake. But he is not sure of anything."

"Did he tell you?"

"No. It would be impossible for him to commit himself beyond the vaguest suggestion."

"Of course. What did he say?"

"Nothing true or of any unmistakable consequence to us. He merely insinuated that Alice's health is not good enough to stand the strain. Having just examined her, I knew that he was lying, and I suspected him of wishing me to know that he was lying in what he considered a good cause. You see, of course, he could give no hint of what may be in his mind. As I said, I feel that he himself is not sure of his ground. Still he does seem to suspect that he may have failed. What could I do? I was bound, professionally if for no other reason, to ignore his suggestion."

"What if he consults some other physician?"

"How can he? Any physician who would do what he hints—and there are plenty, I admit—would not be safe. A reputable man is the only one who can be trusted in a case like this."

"But there hasn't been another case like it, if——"

"Not exactly; that is true. But there have been several on the same level ethically. You see what I mean."

Crane brooded miserably in silence for some moments.

"I wish she would die," he said at length.

"So do I," Brown rejoined. "But there's no hope. She's too healthy."

Six days later, in New York, Crane and his new employers held their first conference over the epoch-making invention which, according to President Williams, was to revolutionize all industry. From the moment he set eyes on Williams, Crane disliked him. The suave president of the new Universal Power Transmission Company was inclined to be fleshy, although still in his forties, with a perpetual and exasperating smile of self-satisfaction greasing his smug features. His assumed joviality and mock goodfellowship made Crane long to smash him in the face.

"What do you think of it, Doctor Crane?" Williams beamed. The patent papers and a rough, small scale model lay before them.

"It's a washout," Crane admitted. "By the way, you haven't told me the inventor's name."

Williams laughed obesely. "I thought you physicists were keen observers. The name is plastered all over the 'Evidence of Conception' alone, to say nothing of the final patents."

"So I observed," Crane remarked dryly. "But you haven't answered my question. Who invented the thing?"

There was an ominous silence. Williams' face lost its oily joviality as he glared at Crane, and the consultants of the staff fixed their chief with doubtful, questioning eyes.

"Do you mean to insinuate," Williams demanded in a voice that cut like steel, "that I did not invent this method of power transmission?"

"Not at all," Crane responded promptly. His tone was conciliatory. Instantly it changed. "What I mean is this. You are a. . . . . liar and a thief."

Williams leapt to his feet, trembling with rage.

"What do you mean?"

"Exactly what I said. You did not invent this. I have known of your work for years—ever since I was a sophomore at the University. It was good stuff—no doubt of it. But the best you ever did was not within a million miles of this." He paused, to emphasize his point. "Gentlemen," he said, addressing the staff, "it is as impossible for President Williams to have made this invention as it would have been for the village idiot of Stratford-on-Avon to write 'Hamlet.' You see the point? President Williams' own stuff is several thousand levels lower. Therefore, I say, he stole this invention."

The silence grew oppressive. Williams broke it.

"You may leave me to settle with Doctor Crane," he said to the silent group. "This is a personal matter. Unless," he added, addressing Crane, "you prefer to apologize publicly?"

Crane shook his head and the staff filed out.

"Now," Williams began when they were alone. "You will withdraw what you said."

"How do you know? As a matter of fact I shan't. I don't want your job.

"You have no job, Doctor Crane. I was not offering you a chance to retract and be taken on again. It is now merely a question of whether you wish to stand suit for libel. The staff heard what you said."

"I'll say it again, if you'll call them in. And I'll tell them who made that invention, if they care to know."

In spite of an effort to control himself, Williams went the color of a dead cod.

"Who do you think made it, if I did not?"

"Miguel De Soto. It has all the earmarks of some work he has been busy on since he joined the Erickson. I would recognize it in my sleep. How did you get hold of it?"

Without a word, Williams rose and opened his private safe.

"You know too damned much," he admitted with a cynical laugh, thrusting the thirty-page anonymous letter into Crane's hands. "What do I care who knows where I got the stuff? It's mine, and I have the patents."

Crane read the letter through. The only point of interest to him was the postscript: "P.S. *My purposes are purely humanitarian and educational.*"

"Well?" Williams demanded as Crane handed back the letter.

"I knew it. De Soto invented your wireless power transmission. The postscript would give him away at once to the President of our Board of Trustees. De Soto is a bigger fool than I thought he was. He has blundered again."

"How?"

"By mentioning education. It's too long a story to hash over again. Besides, what is there in it for me?"

"If you know any facts of value, I could see that you are well paid."

"All right, I know one fact that will save you hundreds of millions—possibly a billion or two."

"Does it concern the invention?"

"Vitally."

"How much do you want for it?"

"One hundred thousand dollars, paid in advance, in thousand dollar bills—common currency. No stopped checks for me."

"You can be insulting when you're in the mood, can't you?"

"I haven't tried yet, so I don't know. Take my offer?"

"I'll consider it if you tell me why De Soto sent me that letter."

"Because he knew you would bite."

"Then you consider the invention deficient in some detail we have overlooked?"

"Not at all. It will work."

"Where is the catch, then?" Williams demanded.

"I don't know."

"Yet you have a suspicion?" Crane nodded. "Very well," Williams concluded, "I'll give you a hundred thousand for your fact. What is it?"

"Easy. Write out this: 'I hereby pay to Doctor Andrew Crane, for technical services rendered, one hundred thousand dollars in U. S. currency, thousand dollar denomination, numbers'—leave space to write in a hundred long numbers. Then you come down to your bank with me and get the bills. We'll have your signature witnessed by the cashier and a couple of clerks, and the numbers of the bills written in. Then you can't stop anything on me—unless you hire a gunman."

"You must think we're crooks," Williams retorted coldly. Nevertheless he wrote. "My backers have billions," he added with a touch of snobbery. "A hundred thousand for vital information is not an unreasonable fee."

"You bet it isn't. Ready?"

At the bank Crane refused to divulge his 'fact' until the bills were safely in his pocket with the duly witnessed statement.

"Now," Williams demanded when they reached the street, "what's your tip? You have your money."

"Just this. Throw away the invention and dissolve your company."

WILLIAMS glared at the lanky young man before him in speechless rage.

"You—" he sputtered.

"Keep cool. That tip is worth all the money your crowd has. If you touch the invention, De Soto will break you."

"How do you know?"

"Because he told our president so just before I left. I heard him. Of course he did not tell us that he had made a free gift of this invention to you. Some things are better left to the imagination."

"But why——"

"Because he hates your methods of doing business."

"What about your own?" Williams flashed.

"The same there. He doesn't like any of us. My idea is that he plans to break all of your crowd first and attend to us later. What he doesn't know about the business mind isn't worth knowing. He knows that all the big money in America would fall for a sure thing—it certainly looks sure enough—like the wireless transmission of all electrical energy at a tenth of a per cent. of what transmission costs now. Who wouldn't? I'd have fallen for it myself, if I hadn't known De Soto. Can't you see? It's all so simple. Your crowd puts all its cash into a sure bet and finds out the day after tomorrow that there is no market for what it sells. Where are you? In the soup. It will cost money—lots of it—to manufacture this device on a world-beating scale, as you intend. Go to it; De Soto will bankrupt you the day you begin to market."

"If I thought you knew what you were talking about," Williams muttered, "I would call it off now. We've already spent four hundred and fifty million in buying up strategic locations for our plants."

"Better swallow your loss and back out. You'll be smashed. Call it off. De Soto is a hardboiled Tomcat and you're an innocent little mouse."

Williams was one of those high-powered Captains of Finance who made lightning decisions in a bold, impressive way, and frequently kicked himself afterward for the heady, natural fool he was. His square, beefy jaw set.

"I'll see it through," he decided, as if he were Napoleon at Waterloo. "This can't be beaten. You're welcome to your fee."

"Thanks. And you are more than welcome to my tip. If I can be of further service, here's my address. I'm going back tonight."

The game was now becoming fairly clear, especially to Crane, who knew certain facts not yet divulged to the commercial world. Feeling that his loyalty—if he had any—was still to the Erickson, Crane did not wait for the slow transcontinental railway service to get him home, but engaged passage on the combined rail express and passenger plane routes. Forty hours later he was in Seattle, telephoning to the president of the Erickson Trustees.

"I'll be at your room in fifteen minutes," the president promised. And he was.

Crane's report was disturbing enough. What could be De Soto's object?

"I can't understand him," the president admitted after a two-hour session during which every aspect of the singular situation was minutely examined. "Well, I can soon put him to a test. If he is on the square, and really has our interests at heart, he will tell us at once how we can beat the Williams crowd."

"He hasn't your interests at heart," Crane remarked quietly. "As I told you the morning he fired me, he hates your guts."

"I'm not so sure," the president demurred. "De Soto is a genius, in business as well as in invention. How do you know but that this scheme of his to trap all the big fellows isn't just a fine evidence of his loyalty to us? After all we have treated him handsomely. What more could he ask? We've deferred to his slightest suggestions. Who made him rich? We did. No; I believe De Soto will make good and show us how to break the Williams crowd flat."

"The biggest smash in the history of American big business," Crane mused. "When it comes, let me know. I'm putting my pennies in a safety deposit vault till De Soto is shot. Now," he continued with his slow grin, "if I really loved humanity I would go out and shoot De Soto now, instead of waiting six months or a year for some busted banker to finish the job as it should be finished. I know a lot about our friend that you don't."

"What?" the president demanded, going white in a vague panic.

"I can't say yet. The information isn't mine to give out."

"Then who can say?"

"That would be telling. I've said my say. My advice to you is the same as that I gave Williams. Fire De Soto, shoot him, have him locked up—anything you like—but get from under him at once. Otherwise he will explode and blow you and all your crowd into little bits. Do I get anything out of this?"

The president reached for his cheque book.

"If Williams could afford to fee you, I guess we can. We're not paupers yet. I shall watch De Soto."

Crane nonchalantly glanced at the cheque.

"Thanks," he said, concealing his elation. "Take my advice and get out. Let the Williams crowd swallow the loss."

The president decided to take the devil by the horns immediately.

"Would you care to come with me and repeat your story before De Soto?"

"Not in the least. Where is he?"

"At home, resting. Mrs. De Soto is not very well, and neither is he, I imagine."

"All right, I'm game, provided we don't run into Mrs. De Soto," Crane agreed. "The last time I called on her she was Alice Kent. She showed me the door. So make this strictly a business call."

THEY drove to the house and were admitted at once. Alice did not appear to greet them. It was a full ten minutes before De Soto entered the reception room. When he did, a strong odor of chloroform accompanied him.

"One of my pets was suffering," he explained, seeing that they noticed the smell. "Excuse me for having kept you waiting. Mercy first," he concluded with a strange smile.

"Pardon me for coming to your house on a business matter," the president began, "especially as you are not feeling very well. But I thought you would be interested in hearing Doctor Crane's report of what happened in New York."

"I can guess it," De Soto replied indifferently. "You remember that I gave him my permission to tell Williams that I can beat anything his firm does. Crane told him; Williams didn't believe him. Is that how it stands?"

"Exactly," the president nodded.

"And you wish me to make good on my brag—as you thought it was?"

"It seems to me, Mr. De Soto, that we have no time to lose."

"I agree. Shall I come to your office at three o'clock this afternoon? Very well. Please ask the technical staff to be present. I shall explain to you and the other trustees exactly what I propose to do. To the staff I shall give only the necessary instructions for making full-size instruments for demonstration purposes. The finishing touches must be done by me when the technicians have completed their part—say about eight or nine months from now. Then, with the perfected apparatus in our hands we can get our patents in short order, just as the Williams crowd is beginning

to sell. We shall scrap all of their plants and the rest of their investment overnight. To manufacture their device on a world scale—which is what they will do—will take practically all of their capital. They won't be content with the American demand, but will strike from the first for the world market. Let them; so much the better for us. In half an hour, or in one hour at most, I will destroy their world market before they have delivered a single transmitter."

"But how?" the president doubted, his eyes rounding with cupidity.

"Later—eight or nine months from now. Let me have a little fun and I'll give you the world to play with. All I ask is the opportunity, when the time comes, to wreck them utterly in half an hour. I'll make it spectacular," he laughed. "No one shall get hurt—except Williams' hand-picked mob of moneyed easy-marks. They'll be flattened. Financially, only, of course. Then you can step in and take the world market they have paid for with their millions of dollars' worth of bribed publicity. If I can't convince you this afternoon you may forget the second."

The president was almost convinced. Still, the fact which Crane had uncovered regarding the origin of the "Williams power transmitter," caused him a twinge of uneasiness. If De Soto could go out of his way to injure men whom he had never seen, what would he do to his daily associates when their backs were turned?

"Is Doctor Crane right," he asked, "in thinking that you sent Williams a thirty-page letter containing the invention they are exploiting?"

De Soto flung back his head and laughed as he had not laughed for months.

"Of course he is right," he chuckled. "But did either of you know that I guessed Crane would see that letter and report what he did? The moment he told me he was going to join Williams' firm, I foresaw everything that has happened—even to this talk and your last question. Aren't you all normal human beings? And don't all such react in the same way to given stimuli? I couldn't help seeing what has come days before it happened."

"But you wouldn't play a trick like that on us? We gave you your opportunity, remember."

"I shan't forget. Haven't I made good use of your generosity? Here I am offering you the world—that is what your monopoly will amount to—and you look for the trademark to see if it is bogus. Of course it isn't! Wait till I have told you my answer to Williams this afternoon. Then you will see the truth."

"I can't see," the president objected, "why you have gone to all this trouble to deceive Williams if you have something that beats his scheme—your other one, by the way—out of sight. Wouldn't it have been simpler to have started with the winner? Think of the time we shall lose—nine months, you say."

"And you a business man!" De Soto said reproachfully. "With all your possible competitors eliminated before you start, you can gobble up all the markets they might have controlled—wheat, cotton, oil, everything—if you had left them any capital to gamble with. But they will be bankrupt, all their wealth squandered on the one key monopoly they thought they were going to get, but which actually you will have. It is the world I am offering you, I tell you! And you begin to cry because you can't get it for a short eight or nine months. I'm almost disgusted with you," he exclaimed with sudden petulance, which was not all in jest.

"Don't think me ungrateful or over-suspicious," the president begged. "But as a business man I perhaps see some things more clearly than you, a scientist, possibly can. You say these men will be ruined overnight. Capital can't be destroyed that suddenly. These men are solid—the soundest in America. Their money is not paper. Steamship lines, great banks, whole cities of office buildings, farm lands, timber, and a dozen other tangible things are their actual fortunes. This is no fight on the stock market. We are attacking real assets. Have you thought of that?"

"Yes," De Soto replied wearily. "I know my economics. Also I know my human nature. To build plants, to manufacture the new transmitters on a smashing scale, to advertise wherever power is sold or used, to get the sales force into the world field, all of this will require real money by the shipload. And where will our competitors get it? From loans or bonds on all those tangible things you catalogued. Who will lend the money or buy the bonds? Not the big men, as usual, because they are borrowers this time. They will get it from smaller men, little banks, conservative investors, and the great public at large. All these will inherit the big men's office buildings, farm lands, timber and the rest. Then we shall step in and take it all away from them again, for we shall control each and every industry from raw material to ultimate consumer. So much for economics. The human nature of it is even simpler. I needn't explain."

"Perhaps not," Crane agreed. "But would you mind telling us how you got that letter delivered to Williams?"

"Ah," De Soto replied sarcastically, "*there* is a real problem. How would you have solved it?"

"Private messenger, provided I could find one I could trust."

"Good. Just what I did."

From the tone in which he said it, Crane inferred the contempt in De Soto's answer. It seemed to say, 'Here I am offering you the world and you turn aside to fiddle over a trivial problem that an idiot could solve.' The talk was suddenly interrupted by the sound of firm steps descending the stairs. Through the arched doorway Crane saw Brown coming down with his black bag. Excusing himself, De Soto hurried out to intercept the doctor.

"Mrs. De Soto is quite ill, I understand," the president confided in a low voice. "Did you notice how nervous and worried De Soto looks? His color is bad, and he has aged ten years in the past week."

"I have noticed the change in color for some time," Crane replied. "When he first came to us he was the color of mahogany, like a full-blooded Mexican. Now he's a sort of lemon yellow, as if he had been living like a beetle under a board for weeks."

"We have tried to make him let up on his work," the president sighed, "but he won't. Some research of his own, he says, has reached the critical stage, and he must carry it through now or lose everything."

"Did he tell you what its nature is?" Crane asked, thinking of the smell of chloroform which followed De Soto wherever he went.

"Something to do with the cosmic rays, I believe, but I'm not sure."

Crane wondered whether the research had anything to do with animals. If so, the strong odor of chloroform would be explained. But he did not share his speculations with the president.

"If you have finished with me," he remarked, "I may as well go. Probably you and De Soto will have private matters to discuss."

"Aren't you coming to the conference this afternoon?"

"I had better not. You see I am no longer officially connected with the Foundation. De Soto might resent my 'spying,' especially as he suspects my feelings toward him. If anything important happens, you can let me know, if you think it wise."

In the hallway De Soto and Brown were conversing in a low tone. Seeing Crane, the doctor stopped short with an exclamation of surprise.

"You back? What happened?"

"Fired, as usual," Crane grinned. "Only I fired myself this time. I'll wait for you outside."

When Brown joined him on the sidewalk, Crane briefly summarized his adventures in New York and his conference with De Soto and the president.

"The hundred thousand," he concluded, "with what the president gave me as a tip are enough to make me independent for life. My tastes are rudimentary. Now I can get to the bottom of what friend De Soto has started." He hesitated. "If it isn't a breach of professional etiquette you might tell me how Alice is."

"Everything is apparently normal. If it were an ordinary case I shouldn't have bothered to call. Young husbands are always so fussy in these circumstances that we usually pay no attention to their worries—they mean nothing. But with Alice, of course, I can't afford to take any chances. The thought of what might happen if De Soto called in another physician is appalling."

"You say she is quite normal?"

"Yes," the doctor admitted hesitantly, "except that she is too anxious. There is something not quite natural about her worries."

"I shouldn't wonder," Crane muttered, and changed the subject. "Wilkes is still determined to present his paper at the meeting of the Biological Society?"

"You know how he is. I've been trying to talk him out of it ever since you left, but he insists. Do you want to come along and see the fun? I shall go, of course, if I can get away."

"Sure," Crane exclaimed. "That's why I made Williams fire me. I wouldn't miss that meeting for a million dollars—and I've only got two hundred thousand. It's tomorrow at ten, as scheduled?"

"Ten o'clock, in the university auditorium. Wilkes' paper is first on the program. Well, I must run along to see an old lady with gas. See you tomorrow at the meeting."

"How are your pets coming on?" Crane called after him.

"Too well," the doctor replied grimly. "I've had to build a high concrete wall round my patio."

CHAPTER XI

The Toad

"THE man is here about the chickens," the housekeeper announced the following morning just as Brown was about to begin breakfast.

"What does he want now? I paid him for grain yesterday."

Nevertheless the doctor went out to see what the male harpy sought. Since Bertha's death the doctor had given up keeping chickens on his own premises. Not having the heart to sell his feathered family to the poulterers, he had pensioned them with a farmer in the country. This genius knew a soft thing when he saw it. According to the bills he presented for chicken feed, Brown's pets must have quadrupled their appetites since moving to the country.

The pest extracted a dollar from the doctor—"for grain," he said—but showed no disposition to leave.

"What are you raising now?" he demanded inquisitively, pointing to the twelve-foot concrete wall with the heavy, solid wooden gate, which had been erected all around the former chicken yard.

"Skunks," Brown briefly informed him.

"For their fur?" the pest persisted.

"No, for their perfume. The Chinese say it is good for rheumatism. I'm going to try it out on some of my patients."

And with that the doctor left the skeptical farmer scratching his head and returned to his breakfast. The housekeeper had been told a similar yarn, so that she should not feel tempted to feed the new pets in the doctor's absence. She was a kind-hearted soul, but prudence puts limits to charity. Brown felt secure in his innocent deceit.

After breakfast he drove over to the university. Being on the program committee of the Biological Society, he wished to be at the auditorium well in advance of the meeting to round up the speakers.

"What's this stuff old Wilkes is springing this morning?" a somewhat flippant young man in rimless glasses demanded. "He's down on the program for a paper on 'New Light on Evolution.' Where did he get it? Wilkes hasn't had a new light on anything for the past twenty years. Do you think it will be worth hearing?"

"'He that hath ears to hear, let him hear,'" Brown quoted with an enigmatic smile and passed on.

"Now what did he mean by that?" the cocksure young man muttered, unconsciously scratching his left ear. Wilkes' paper had been accorded the place of honor on the program, also the unusual time allowance of forty-five minutes. This was solely due to Brown's earnest persuasions with the committee. The other members took the doctor's word for it that he had carefully gone over the paper and that it was of the first importance. As ten o'clock drew near Brown began to show traces of nervousness. What if Wilkes overdid things and made it too sensational? The society would jump all over him. To ease his feelings, he fussed about the lantern and the motion-picture machine, heckling the operator with unnecessary directions.

"Run it through in slow motion first," the doctor emphasized for about the twentieth time. "Then give it to them as fast as you can without blurring."

"Sure, I understand," the operator replied gruffly. "You told me before."

"If you foozle it—" The doctor hurried for the platform. It was time to open the meeting, and the chairman was still smoking in the lobby. Just as Brown reached the door De Soto sauntered in and took a front seat.

"Hullo," Brown exclaimed under his breath. "He suspects someone. I hope it isn't me." Going over to De Soto, he gave him a hurried greeting. "Mixing a little biology with your physics?"

"Only a little," De Soto smiled. "I saw the title of Wilkes' address in the paper and thought it might be amusing."

"It will. The old chap has something brand new." He lowered his voice. "How is Mrs. De Soto this morning?"

De Soto's face clouded. "Nervous again. I made her take some of what you prescribed. Could you drop 'round to see her some time today?"

"Certainly. I'll go as soon as Wilkes has read his paper. Excuse me now; I've got to start things going."

The chairman regretfully flung away his half-smoked cigar, mounted the platform and called the meeting to order. As the business meeting had already been attended to by the council, he proceeded at once with the scientific program.

"The first paper is entitled 'New Light on Evolution,' by Professor Wilkes." He turned and nodded to Wilkes, who sat in the front row not far from De Soto. "Professor Wilkes."

Wilkes gravely mounted the platform. The curious audience of some three hundred expert biologists and intelligent amateurs with an interest in evolution noted that the professor had no manuscript in his hand. The

experts sat back with a sigh of disappointment. After all it was to be a popular address, ninety-nine per cent. hot air and inspiration, one per cent. scientific fact. It was just what they would have expected from Wilkes, who had been scientifically dead for years. Wilkes gave them a surprise.

"Mr. Chairman, ladies and gentlemen," he began and proceeded at once to scientific business. "The first slide, please."

The hall was darkened and a beautifully executed micro-photograph was projected on the screen.

"Old stuff," one skeptical expert whispered to his neighbor. "He got that out of Blair on the protozoa."

"Next," Wilkes requested.

"Blair's again," the skeptic whispered.

"Next."

"If he's going to show us all the protozoa in Blair, he won't get through till this time next year."

"Next."

"Hullo! Where did he get that one?"

"Next, please."

"Another, by Jove! Caught in the very act of dividing."

"Next."

"Fake," more than one expert whispered.

"Run them through more rapidly, please," Wilkes directed the operator, "one at a time."

As fast as he could change the slides the man at the lantern flashed on approximately a hundred photographs of the simplest animals known to science, the living things which consist of but a single cell. The exhibition was received in uncanny silence. Experts held their breath, amazed at the magnitude of what they were seeing—provided it was all genuine—or grimly waiting their chance to pounce on the audacious Wilkes should he prove to be hoaxing them. Laymen who had strayed into the meeting in the hope of witnessing a battle royal between monkeys and men felt vaguely disappointed. Why didn't the professor say something? The answer was simple. Words were superfluous to those who could read the pictures, and he was talking only to them.

The long series of individual slides came to an end.

"The motion pictures now, please," Wilkes requested. "Slow motion first."

THE fruit of laborious weeks of toil by Wilkes and Brown was now slowly unrolled in a coherent sequence on the screen. The spectators saw a different succession of protozoa gradually evolving before their eyes. Types of the utmost simplicity survived through their transient generations, passed out of recognition as individual species and bloomed into new life, more complex and more highly specialized than their ancestors, and those again gave place to higher forms. The history of a million years flashed by every five seconds, and still the general trend was upward toward diversified perfection and increased richness of life. Gradually the rate of ascent slackened. The millions of years represented by sixty seconds of the moving film revealed no discernible variation in the structure of the minute, perfected creatures; they seemed to have passed forever into their perennial Golden Age. Then, in five seconds, first one splendidly developed organ degenerated, atrophied, and passed out of living history, then another, until within thirty seconds the descent was accomplished, and the countless millions of years of the slow, upward climb were undone. The whole cycle of evolution had swept round its circle, and the last generation, the end product of it all, was a degraded thing fit only to fasten as an inert parasite on the first creatures that had risen. Wilkes added a footnote.

"About one-third of the pictures from which that film was made are photographs, the rest are sketches by myself, Professor Hayashi of Tokyo, and a third man who wishes to remain anonymous. Please run it through fast now."

"One-third fake, two-thirds humbug," the skeptics whispered. "Wait till he gets through. He's the Charley Chaplin of biology."

The fast motion pictures were even more impressive. A whole race of animals seemed suddenly to open out like a rose in the sunshine, bloom gloriously in perfection for a few seconds and fade in a flash. The struggle of millions upon millions of years justified itself in those few seconds of beauty; the complete and final futility of the end mocked the struggle and made its justification a bitter nothing.

"Lights, please," Wilkes requested. "Thank you." He bowed, left the platform and resumed his seat. He had used but thirty-five of his allotted forty-five minutes.

"Is there any discussion?" the chairman asked.

A dozen men were on their feet instantly, but De Soto was first.

"Mr. De Soto," the chairman nodded. The others sat down on the edges of their seats.

"Mr. Chairman," De Soto began, "I must apologize for speaking in a biological meeting. But I should like to ask Professor Wilkes whether he has prepared a similar motion picture of the evolution of man."

"No," Wilkes replied, rising. "The data are not available."

"Do you think they could be obtained?"

"It is not impossible," Wilkes admitted quietly.

This was the last straw to the outraged experts. The chairman was forced to use his gavel.

"Professor Barnes," he announced when the commotion subsided.

Barnes was an unimaginative, middle-aged man who had made a very considerable reputation by contradicting his superiors on details of no importance and proving them in error on things which they had never said. If any disagreeable job was to be done, Barnes was the man to do it. The experts leaned back, satisfied that their case was now in competent hands.

"I fail to see," Barnes began in an injured tone, "why a meeting of the Biological Society should be turned into a vaudeville for the entertainment of amateurs. No competent biologist would give Professor Wilkes' fantastic reconstruction of what he imagines to be the past and future history of the evolution of the protozoa a moment's consideration. I move that Professor Wilkes be requested to withdraw his paper."

"Second the motion!" came from a dozen scattered points, like the cracking of snipers from an ambush.

"It has been moved and seconded that Professor Wilkes be requested to withdraw his paper. Is there any discussion? Professor Wilkes?"

"I have nothing more to say at present."

"Any further discussion?"

"Before we vote," the chief skeptic, Barnes, volunteered, "I should like to know what Professor Wilkes meant by his last remark. It sounded to me like a threat."

"Professor Wilkes?"

"Mr. Chairman, it is only fair to answer the gentleman's question. The society holds its next meeting three months hence in San Francisco. Six months from now we meet here again. At that time, if the gentleman still wishes further evidence, I will present him with an argument that would silence Balaam's ass."

All but two of the audience laughed. Brown noted that one of the exceptions was De Soto. The motion was carried.

"Professor Wilkes is requested to withdraw his

paper," the chairman announced. "Professor Wilkes."

Wilkes rose up, lean, angular, self-possessed and obstinate.

"I'll be damned if I do," he said simply and sat down.

IN the ensuing debate it developed that parliamentary law had no statute adequate to deal with Wilkes' offense and his unrepentant contumacy. To the chagrin of the conservatives, the paper had to stand as delivered. It would be duly printed, slides and all, in the society's sober proceedings. Several left the auditorium. Wilkes stuck to his seat like a barnacle, saying nothing, his jaw set and the light of battle in his eyes. He was not without sympathizers. Already the astute reporters were composing their sensational stories in which the name "Balaam Barnes" figured with undue frequency.

Brown nodded to De Soto and they left the meeting together.

"A great paper," De Soto remarked as they stepped into the doctor's car. "Where did Wilkes get his material?"

"Do you really want to know?" Brown asked seriously.

"I may as well," De Soto replied.

"Wilkes and I got most of it from the water in which you bathed that evening you came to my house."

To the doctor's surprise, De Soto showed no astonishment.

"I suspected it," he admitted finally. "Do you and Crane know what you are doing?"

"Not exactly. Nor," he added after a pause, "do you know what you are doing. Otherwise how do you explain obvious ignorance when you came to consult me? You did not know the cause of the itching of your skin."

"I admit it. But you forget that nature is like an open book to me—when I am feeling well. Something is happening to my brain," he continued after a long pause. "Thinking tires me. I never used to think, but saw the inevitable consequences of any pattern of circumstances—no matter how complicated—immediately, like a photograph of the future. The tingling of my skin did not puzzle me. I knew the cause."

"Then why did you consult me? You were pretty badly upset."

"I was and I still am. Through a stupid blunder I exposed myself to rays of an unknown hardness. If only two million volts or less, say, than five million, were being fed into my tube when I forgot to open the switches, I should not worry. In that case only the lowest forms of life would be affected."

"The protozoa on your skin?"

"Exactly. Have you any idea where those initial forms originate?"

"That is the one thing that puzzles me," Brown admitted. "The average human skin is alive with bacteria and other low forms of life, but not with the sort of thing we have just seen."

"Not even with lower forms that might evolve into the types in Wilkes' pictures?"

"No. I am certain of it. The whole trend is different. Do you know what I suspect?"

"I can guess. You think that you and Crane have stumbled upon the secret of creating life. You haven't."

"Then what have we done? Where do those types originate?"

"In star dust. They are not those that have survived in the course of terrestrial evolution. But let that pass. What can theories do for me, with Alice on my hands?"

"You suspect something?"

"I do. And so do you. You have guessed by now, of course, that I know who Crane's confederate was in my laboratory that night?"

The doctor went cold.

"Who?" he asked in a level voice.

"You, of course. Couldn't you guess that human motives and commonplace human deceit would be childish games to a man who reads all nature as you read your newspaper? Or rather," he added in a low voice, "a man who once had that capacity."

"You are losing it?" Brown demanded quietly. "I thought I had noticed a dulling of your faculties. Why don't you rest? Your color is not good."

"I can't. But let that go; it is of no importance. To go back to the other for a moment. You men are all so trivial, so unambitious for anything that will count a million years from now. Laugh if you like. What good are the futile things you do for yourselves and your children? Think of the race—the human race! As individuals we are like those parasites on my body that Wilkes and you have taken all this labor to elaborate. The race is on my body; men, the protozoa swarming over it and breeding aimlessly. If we cannot preserve and mature the whole race and make one intelligent, purposeful being out of it, we are no better than an irritating itch on the skin of eternity. I could have done so much for it—once. They asked me for trash that would delight an idiot child for half a minute. They still ask it and I shall give it to them—till I get tired."

"Let me repeat," Brown persisted, "that you are ill and must rest."

"Don't I know it? Then why can't I rest? Just because I *am* unwell. When I first thought of marrying her, Alice was no more to me than you are or even Crane. She was just another human being. Some day I may tell you why I married her. Then a stupid accident began my degeneration. In another six months I shall be as foolishly humane as you are—curing the sick and helping the defective who should be mercifully exterminated or at least sterilized. I have grown to love my wife, even as you might yours, if you were married. That is why I have let you believe that you and Crane had deceived me. When you know everything, you will see that I am degenerated and done. Four months ago I could have solved my own problem. Now I can't. I have to rely on you."

"In what way?"

"Need she go through with what is before her?"

"I am afraid she must, even if I could throw my professional ethics overboard—which I can't. She is too far along. Why can't you speak out? Has the worst happened?"

"I don't know. I have degenerated, I tell you!"

"Well," the doctor muttered, "here we are. It can't be undone now. I'll go up and see her. She eats well and sleeps normally?"

"Yes, but she is afraid. Even I can see that she is not natural."

"It is only your morbid fancy, man. Cheer up. She will come out of this with flying colors, and you'll be the happiest man on earth."

The doctor found Alice happy and cheerful. The usual sickness had left her and she was busily fussing with the plants in the conservatory off her bedroom.

"Tell Miguel I'm all right now," she begged. "I can't bear being marooned here all night while he is off working at the laboratory."

"But I thought he was taking a layoff, Alice?"

"Oh, I know he is supposed to be having a vacation. But he spends practically the whole night at the laboratory and often most of the morning. Then, when he comes home all tired out in the afternoon, he is so cross I hardly dare speak to him." She smiled ruefully. "He seems to prefer the company of his pets to mine."

"You just imagine it. Don't you know that a woman

in your condition always sees thousands of things that aren't so? Why, I was just talking with Miguel about you when we drove up. He's positively silly about you."

"Do you think he would let me watch him working in the laboratory again as he used to do?" she asked, brightening. "He loved it."

"Why not ask him?" the doctor suggested, eyeing her narrowly.

"Oh, he always puts me off. I sometimes wonder whether there isn't another—" She stopped, embarrassed by the accusation she could not frame.

"Woman?" Brown finished for her, laughing. "My dear Alice, you are like all the rest at this time. Tell your husband what you fear, and he won't let you out of his sight."

THAT evening at dinner De Soto, acting on a hint from Brown, went out of his way to keep Alice amused and interested. She had a natural taste for science and was fairly well informed on all that went on at the Foundation. Biology, however, was an unexplored romance to her, as it is to most young women who should know it—if they should know any science. At school and college she had been fed the traditional slops of literature, economics, art and domestic science, with not one significant word of the one body of knowledge which women, above all others, should know. The vital functions of her own being were *terra incognita* to her, and the simple facts of the great miracle now transforming her whole life were as unknown to her as they might have been—and were—to an educated woman of the middle ages.

Her husband sought to enlighten her. He began with an amusing account of Wilkes' paper and its reception by the hopeless conservatives. Thence launched out on a flaming prophecy of what mankind might do, were it so minded, with its own destiny.

"But," Alice objected, "fate or destiny is something that cannot be altered."

"In the past, yes. We have blindly let nature lead us. A century from now, if we wished, we might be leading nature."

"Is that what you are working on?"

"I was," he admitted in a strange voice. He rubbed the back of his hand across his eyes. "But I am forgetting how."

"Perhaps if I were to be your mascot again your luck would return," she suggested gaily. "Can't I come and watch you tonight?"

De Soto started to raise some pertinent objections, saw the hurt look in her eyes and yielded.

"Come along," he said cordially. "On one condition, however. You must take a nap whenever you feel sleepy. I shall probably be working all night. There is a comfortable cot in the closet there. I'll drag it out when you begin to nod."

She was absurdly happy. "Miguel," she confessed, "do you know what I was imagining in my morbid condition? Other men run about with women, and I feared you might get that way, too."

He laughed boisterously. "Women? I haven't thought of another woman since—" The puzzled frown that was becoming habitual with him suddenly darkened his laughing face. "Since when?" he muttered, scarcely aware of her presence. "I seem to remember a dirty suitcase full of letters. From girls. Where was it?"

"Buenos Aires?" she suggested softly.

"How could it be? I was never in South America."

"Oh, Miguel! Can't you remember anything? Where did you study? You knew all about physics when you first came to the Foundation. At least that is what my father told me."

"Did he? Then he must be right. I have forgotten. Never mind now. It really doesn't matter." He paused irresolutely before putting the question he vaguely feared to ask. "Did your father ever speak of anyone by the name of Wilson?"

"Not that I remember. Why do you ask?"

"Just a fancy. I seem to recall a man of that name who had a great deal to do with my education. Have you ever heard of amnesia—loss of memory? Well, I often think that is what is the matter with me. Some day my whole past life will come back. Honestly, Alice, it is all as black to me as it is to you. That is why I work incessantly—so that I shall never remember."

"You are afraid of what you have forgotten?" she asked quietly. She spoke to him as one might to an ailing child. He, not she, was the one in need of care.

"Desperately," he admitted. "Work is the only relief. Sometimes, do you know," he continued gravely, "I am so disturbed that I am tempted to try drink. Yet I have never touched the stuff."

"Don't," she counseled. "That would only make it worse. Can't you remember anything of your father and mother?"

"It is all so impossible," he replied with a short laugh. "Did you ever hear how Leonardo da Vinci is said to have remembered, when he was a grown man, the days when his mother nursed him? You have read that? I go farther back in my memories. I remember the dark place where I lived before I was born. There was an intolerable flash of light, a terrible conflict in the darkness, and I found myself in a world that seemed strangely familiar yet utterly new. My very life contradicted itself; I had no right to live, and yet I lived. Gradually the dark place of my prenatal memory faded and I found myself a man. The same thing is happening again. It is just like those slides that Wilkes showed this morning and his great moving pictures. Those protozoa I told you of slowly climbed to the very peak of their perfection, only to shoot to ruin in what, comparatively, was a second. The flower of my manhood has closed. Old age is upon me and beyond it the darkness of oblivion."

"Oh, Miguel! Can't you see that you are still a young man? Isn't your mind as fresh as it ever was—since you began your true life work?"

"My true life work? I have forgotten what it is. Only an aimless conflict of cross purposes remains. No sooner is a project started than I tire of it. There was one thing—or were there two?—that I hoped to do for the whole race. Did I ever start them? If so, I have forgotten. For all I know, both of them may now be working out for the good or evil of us all."

"Don't you have some definite aim in the work you are doing now?"

"Apparently not. I work by instinct and by habit to drug my mind. Without incessant work I should be forced to deaden my brain with drugs or drink. The most terrible part of it all is that one dead purpose after another speaks unexpectedly from its grave when I am alone and thinking of nothing. Then I try to put it into action, only to lose interest before I have completed a definite piece of work."

"Can't you find some one thing that will interest you and make you happy for its own sake?"

"There is one," he said slowly, fixing her with his sombre eyes. "And it is at the root of all the others, if only I could remember why it is."

"What is it?" she whispered. The look on his face made her feel old and ill.

"Life and what it may become," he answered. "The creation of life and the remaking of it to my will, in spite of chance and blundering evolution. This was my dream." He absently reached for her cigarettes, took one, put it between his lips, lit it and inhaled deeply

...e an inveterate smoker. "I have not yet told you the worst that rides me like a nightmare and makes me afraid to lie down at night." She was staring at him, round-eyed. "The worst is this. I know that I shall return to the black place where I lived before I had a mind, and I know that I shall remember everything when it is too late. One hideous thing that I cannot explain always comes out of the darkness when I close my eyes."

"What?" she asked, cold with fear.

"A black spider. This is the key to my lost memory."

She tried to hide the terrible shock his confession had given her.

"Miguel," she said, "I never knew you smoked."

"Am I smoking?" he exclaimed, staring at the cigarette as if it were a deadly viper. "When did I light this?"

"A minute or two ago. Don't you remember?"

"No! I have never smoked." He wiped his mouth distastefully. "The smell of tobacco nauseates me. That settles it. Time I was at work, instead of sitting here talking nonsense."

"I'm coming," she insisted firmly. "You said I might."

"Did I? Well, come along. Brown was right," he laughed. "He told me not to let you out of my sight or you'll be getting foolish notions into your head. We'll have a good time; I'll work while you read and sleep. Come on; there's nothing like work."

THEY reached the laboratory shortly after nine o'clock. It was quite like old times. Work, after all, Alice thought with secret joy, was the one solvent for her husband's moodiness. Like many who tax their minds incessantly, Miguel was inclined to be neurotic. Creation was the only relief for him—self-forgetfulness. "Who would find his life must lose it." So she thought, poor girl, little dreaming that the self-torturing man

It was a toad, the size of a full-grown man, hideously deformed, without eyes, its gelatinous skin pitted and pocked with holes the size of a human fist, from which dripped and trickled a constant shower of young.

at the dinner table was her true husband, and the brilliant inventor absorbed in his work the artificial shadow.

"I'm working at the two million volt level tonight," he informed her, "so I must be careful."

"But I thought you handled twenty million volts without worrying much," she objected with mild surprise.

"I do. The two million volt is the critical point. The slightest slip, and I pass from the gamma rays to the cosmic—the softer, of course. Once they start generating in the tube, they may go on indefinitely and rip through the whole scale, beyond the very hardest rays that come to us from interstellar space. Then there is likely to be the devil to pay unless we are adequately protected. So I shall make you wear a triple outfit of the screening material. It won't interfere with your movements. The stuff is as light as a cobweb."

"Are you sure you won't be in danger?"

"Positive," he laughed. "I've been working at this for two days now."

Going to the closet, he clothed himself in three suits of insulation and selected the same for Alice. Before taking the garments to her, he glanced furtively toward the chair where she sat reading, noticed that she was apparently absorbed in her book, and softly closed the door of the closet. Then, from a shelf beneath the electric light, he picked up a small flat dish the size of a silver dollar, and held it up to the light. The dish was full of water. In the water a single transparent globule, as big as a small pea, just floated. The globule might have been an oil drop or a fish egg for all that the uninstructed observer could see without close inspection. A slightly darker nucleus, however, precluded the oil drop hypothesis. De Soto seemed satisfied. He deposited the tiny dish on the floor, picked up the three suits for Alice, turned off the light, and opened the closet door.

"Here are your togs," he called, carefully closing the door of the closet. "Come over here and I'll help you on with them."

They were as happy as a pair of children. All the gloomy talk of the dinner table was forgotten in the simple adventure of dressing Alice up to look like a strayed aviator from another planet.

At last she was dressed in her triple armor and went back to her station. De Soto walked over to the black devil box and began making the connections with the new tube. This was not a replica of the one which Crane had smashed, but an improved design. It was indeed the very model which he had exhibited the previous afternoon to the desperate trustees as his answer —when fully developed—to the bid of Williams and Company for the power markets of the world. This, he had emphasized, was merely the key idea; the commercial development of it would be a work of months for the whole staff. But it would be ready when Williams shot his bolt. Experiments for the good of commerce and the salvation of the trustees, however, were not De Soto's object for the moment. His purpose was more abstract. One cannot always be thinking of money, especially when one has more than is necessary. The evening's work was to be devoted to pure curiosity.

It started tamely enough. The easy connections were made almost automatically, and De Soto threw in the first two hundred and fifty thousand volts. Unlike Crane's unwieldy tube, De Soto's kicked up no spectacular display. There was no fluorescence. Alice followed his movements surreptitiously, saw that he was absorbed and happy in his work, and dipped into her book. By carefully timed steps he worked the voltage up to the two million mark and stopped. Alice glanced up.

"I must say your experiment isn't very exciting," she called across the laboratory.

He had completely forgotten her presence. At the moment she spoke, his back was toward her. Hearing a voice, he started violently. Then he remembered, and laughed. His wife was there. But in wheeling round he brushed against two of the screw switches with the sleeve of his transparent armor. The tube was set to receive and withstand only two million volts. Instantly, an unpredictable mishap, twenty million surged against the cathode with an irresistible impact.

It was too late to rectify the error by "killing" the whole apparatus. De Soto did this automatically when he realized what had happened, as he did immediately. Alice saw his face freeze in horror, why, she could not understand.

"Is anything wrong?" she cried, starting up and running toward him.

"Stay there!" he shouted. "Don't touch your clothes!"

"Come away!" she cried, dreading she knew not what. "Oh why don't you come?"

"I can't," he groaned, frozen where he stood. "I begin to remember. Watch!"

In the lower half of the tube a blinding blue light suddenly flashed up, flooding the laboratory with a ghastly, lurid brilliance.

"It should be white!" he croaked. "This is wrong!"

The blue light contracted, as if compressed by an invisible piston, and increased intolerably in intensity, Narrowing rapidly to a mere plane of blue fire as the piston descended, it became extinct.

"Look out!" he shouted. "It is going to explode!"

The concussion never came. Staring at the sheer black of the vacuum, De Soto saw the tiny vortices which he anticipated like a man in a dream, spinning from the outside of the crystal window and expanding as they spun. One broke against his protected hand, another struck the transparent insulation before his lips, and still he could not remember.

"I have done this before," he groaned. "Where? When?"

"Come away!" Alice entreated, seizing his arm. "This must be dangerous—oh! what is that?"

His eyes followed hers to the door of the closet. Something was moving about angrily in the darkness and blundering against the loosely fastened door in its efforts to escape.

"What is it?" she choked, clutching his arm in terror.

"I can't remember. There was a spider in a box——"

He never finished the sentence. The flimsy catch suddenly gave way, and the incredible monster lurched into the laboratory. Believing she had gone mad, Alice fled shrieking for the exit. De Soto froze where he stood, fascinated by the enormous creature hopping toward him. It was a toad, the size of a full grown man, hideously deformed, without eyes, its gelatinous skin pitted and pocked with holes the size of a human fist from which dripped and trickled a constant shower of young. As they rolled helplessly over the concrete floor the lumps of spawn began to develop, to thrust out feeble legs, and to increase in bulk like the arithmetic of a nightmare. The huge mishapen brute collapsed and became a swarming lump of fecundity.

Before he realized what he held in his hands, De Soto found himself playing the withering flame of the oxy-acetylene torch over the hissing mass and its multiplying offspring. As they puffed up and burst under the fierce heat, to disappear in wisps of vapor, he had a vision of thousands of black spiders boiling from a small box. It happened once, but where?

Sick with loathing when his task ended, he rushed from the laboratory to overtake his wife. She had collapsed outside the door.

"I must make her believe it never happened," he groaned, lifting her in his arms. "Taxi," he shouted, hailing a passing driver. "My wife is unwell. Hurry!" He gave the address and tumbled in with her. "I am a fool," he muttered. "Like all of them I can only blunder."

On reaching home he put her to bed and telephoned for Brown.

"She had a fright in the laboratory," he explained. "Tell her it was nothing."

"Was it nothing?"

"Yes, if she is to keep her mind."

Alice lay critically ill for two weeks. During her waking moments she was barely rational. Whether she believed the assurance of De Soto and the doctor that she had imagined the horror, neither ever learned. When at last she recovered, pale and shaky, she never referred to the incidents of that terrible evening. They thought she had forgotten.

CHAPTER XII

His Son

ONE morning six months later, a puzzled oculist sat staring into the right eye of a tired-looking young man of sallow complexion.

"It is the most extraordinary thing I ever saw," the oculist exclaimed. "You say your vision is still perfect?"

"As good as it ever was," the oldish-looking young man responded wearily.

"When did you first notice this?"

"About five months ago, one morning while I was shaving. I saw a small blue speck on the top rim of the iris—at the base of the blue wedge now. At first I thought it might be the beginning of a cataract. As I never read now, I didn't worry much."

"It is not a cataract," the oculist asserted. "There is simply a thin blue wedge in the general black of the iris. Your eyes are changing color, that's all. Nothing to be alarmed about. Would you mind my reporting the case to the Medical Society? Of course I shall not give your name, Mr. De Soto."

"Not at all. So there is nothing to worry about?"

"Nothing that I can see. You are just reversing the usual order. Babies born with blue eyes often turn brown-eyed or black-eyed after a few months. I hope you're not going back to the nursing bottle," he concluded with a laugh.

"No fear," De Soto responded gloomily. "But I should like a good jolt of whiskey."

"Perhaps I can oblige you," the oculist smiled. "I keep this for my patients when they must hear bad news." He poured a stiff drink for De Soto and half a dozen drops for himself. "Here's luck."

"Luck," De Soto responded, and tossed the drink down his throat. "That was what I needed."

Outside in the cool morning sunshine, he had a sudden revulsion of distaste. "What ever made me drink that rotten stuff? It tasted like varnish. Ugh! Never again."

He hailed a cab and drove to the Foundation. There was to be a full meeting of the Board of Trustees to discuss the offensive of the Erickson against the Universal Power Transmission Company. Disregarding Crane's hundred thousand dollar tip, Williams had gone ahead at top speed for the past six months developing "his" invention on a world-wide commercial basis. For the past month he and his associates had been deluging America, Europe, Africa and Asia with their propaganda, broadcasting the glad tidings that the wireless transmission of electrical energy—high power or low power—was no longer a dream of the theoretical engineers, but an accomplished fact that would shortly be on the market. This, as they justly claimed, was an industrial advance comparable in importance with the invention of the steam engine. Just as the steam engine with its railways and steamships killed the stage-lines and the windjammers at one swipe and brought about the industrial revolution, so this new method, as simple as A, B, C, of transmitting electricity without wires from producer to consumer, would stand the industrial world once more on its head and shake the last nickel out of its pockets. The nickels, the dimes and the dollars were already beginning to rain down in a jingling shower that threatened to drown the new company in a deluge of prosperity. Many a solid concern rated in the billion or half billion class had already thrown up its hands. Why fight? Their flanks were turned and their retreat cut off. Better to make peace while they might by selling out to the junk dealers and passing on the loss to their stockholders and bondholders.

Through all this furious publicity the Erickson crowd remained strangely silent. Was it the silence of defeat or the prelude to a stealthy, wholesale throat-cutting that wouldn't leave the foolish Universal a larynx to crow with? There was no doubt that Universal actually could transmit electricity without wires at a negligible cost and that it was prepared to do so throughout the civilized world. Then why was the Erickson so quiet about it all? Surely it must be ruined with the rest? Only the trustees and the technical staff knew the answer. Patents had been applied for but not yet granted. And the applications were so ingeniously framed that not one expert in a million would guess their particular value. Even the technical staff as a whole did not fully grasp what they were doing; De Soto so apportioned the details that no one man could possibly get a glimpse of the whole. The preliminaries were ended; he himself would put the finishing touches.

The president opened the meeting with a glowing tribute to the genius of their Director, who, he declared, had given them the world to play with. They must not, he concluded in tones of lofty solemnity, abuse the great privilege which their own business enterprise and the great skill of their Director had given them. Far from it. Greed and unscrupulous monopoly might actuate their competitors—witness the ruthless manner in which the Universal was crowding less lucky corporations into the ditch—but such base motives never had been those of the Erickson and never would be. A world monopoly not only of power transmission but of the means of generating power would put the Erickson beyond competition. Be theirs the mission to bring industry and the public—the ultimate consumer—into closer harmony and a deeper appreciation of the inestimable benefits which a wise business foresight confers upon groping humanity. All this for a reasonable and legitimate profit of a thousand per cent. on their investment. Would Mr. De Soto care to make a few remarks?

Mr. De Soto would. He swayed slightly as he rose to reply—for to him it was a reply, and not a mere footnote.

"GENTLEMEN," he began, "you must pardon me for being just a little drunk."

"Mr. De Soto!" the president soothed in an audible undertone. "We know you are joking."

"I am not joking. I'm drunk. Fifteen minutes ago I had a damned good stiff jolt of real whiskey. Otherwise I shouldn't be talking now. I had intended saying it sometime later. Please don't make the mistake of

thinking I'm so drunk that I can't see straight. It was the first drink I've taken since—God knows when, I don't. And it has gone to my head. It gives me a warm, human glow."

They stared at him in astonishment. Was this their usually polite—if sometimes brusque—severely scientific and eminently practical Director? The man who had given them the world to play with? Surely not. And yet—*could* he be telling the truth? But then, he never drank. At their hospitable homes he had always waved the cocktails and the gin, the sherry and the wine aside with an air of sincere indifference that no amount of art could hope to simulate.

"A warm, human glow, gentlemen," he repeated with emphasis. "Do you know what that means? You don't. Right now you are thinking of ways to quarter Universal after it is dead. You don't like its presumption in daring to invade your territory. Will you stop when you have broken them? You will not. As long as one of its backers, or its bondholders, or its stockholders has a dollar in his pocket, you are going after it till you get it. Pardon me, gentlemen, if I cannot restrain my feelings."

He turned aside and spat out of the window. Continuing, he made his plea.

"You make me sick. Sicker than that rotten whiskey made me. All my life I have been looking for a human being, and I haven't found one." His tone changed. "For humanity's sake," he said in a low voice, "I implore you to drop this before it is too late."

A trustee rose. De Soto's words had impressed him.

"Are we to understand that your answer to Universal is not what you thought it was?"

De Soto burst into a roar of laughter.

"Incorrigible," he shouted. "Absolutely incorrigible. Take what is coming to you."

The president took up the parable. Numerous disquieting hints released by Crane came home to roost. In particular he recalled Crane's disquieting theory that De Soto might ruin both the Universal and the Erickson, not merely one or the other.

"You feel confident that our demonstration will convince the experts?"

This time De Soto did not even smile. His plea, he realized, would fall on stones.

"It would convince anyone," he said. "Send out your invitations for four weeks from today—cable, telegraph, write. That will give the Europeans ample time to get here. Don't forget to include liberal travelling expenses and expert fees. You will get it all back. But, for the last time, I ask you to call off the whole thing. There is one humane thing to do now, and only one. Lay your whole project before the Universal. They will see that they are hopelessly beaten. Then agree to withdraw your scheme, scrap the invention, and forget it completely, if they will do the same with theirs. They can lose no more that way than if they stick to the last. If they ever attempt to market their device or to transmit power themselves you can stop them instantly by threatening to compete."

"But what is the point?" a trustee objected.

"I can't tell you."

"Why didn't you warn us—as you seem to be doing now—six months ago?"

"Because then I had not gone soft. My plans were different, although even then I was beginning to doubt and to weaken."

"Weaken on what, Mr. De Soto?" the president demanded curiously.

"My purpose when I first sought employment at this Foundation."

"And what was that?"

"I will not tell you."

"Why not, Mr. De Soto? It cannot have been dishonorable, surely?"

"Dishonorable?" De Soto laughed. "What is honor to a fool? I do not choose to tell you because I have changed my mind. Or rather," he added, "my mind has changed me."

They scrutinized him shrewdly. Was he trying to betray them to Universal? At length one trustee expressed the common sentiment.

"If, as Mr. De Soto assures us, we can't lose out, I don't see why we should discuss the matter further. I move that the Director be instructed to carry out his program, four weeks from today, as already arranged."

"Second the motion."

"Moved and seconded—."

The vote was carried unanimously.

"This is your final action?" De Soto asked quietly. The president nodded. "Then I shall make my last appeal. You will smash Universal, as I have promised. But in doing so you will not benefit your customers. Have you their interests in mind, or your own? I can convince Universal that it also will not make its customers any happier. If you abandon this now, I will make them give up theirs tomorrow. Which is it to be? Your own gain, or that of the people you serve?"

There was a dead silence.

"Very well," De Soto continued. "That is your answer. I understand. Please accept my resignation, to take effect immediately. After all, I shall have accomplished my initial purpose in joining your staff. Perhaps it is the best. I tried to nullify it only because I have gone soft. You yourselves are the best judges of what is best for you."

"Don't act in haste," the president begged as De Soto walked from the room. "We shan't accept your resignation until you have had four weeks to think things over.

"Take a rest and you'll feel better."

"Four weeks?" he echoed with a bitter smile, his hand on the door knob. "Why keep me? The full instructions for capturing the world markets in everything, not only power, which is at the bottom of it all—are already in your hands. Your Board has the detailed plan before you, and your very competent engineers can execute it. Put it into action four weeks from today. You will not need me. I shall move out of the Foundation residence tomorrow."

"Mr. De Soto!" the president protested in a shocked voice. "The residence is yours indefinitely, whether you stay with us or not. Surely you do not think us——"

"I think nothing whatever about you," De Soto retorted, opening the door, "except that you are hanging yourself, your sons and your daughters, and saving me the trouble. I would tell you to go to hell, if I did not know that the next thirty years on this earth are going to beat any hell ever imagined by the worst diseased imagination of the middle ages—Dante's." Closing the door behind him, he left the outraged trustees to their thoughts.

"Drunk?" one hazarded.

"Or crazy. It will be a good thing if he does resign. We don't need him any longer, with this in our hands. I vote we make no advances to him to reconsider. What can he do for us? Nothing."

And that seemed to be the general opinion. The meeting dissolved without formal action on the resignation of the Director. Watch and pray, wait and watch, are good slogans, in business as elsewhere. They decided to watch. For the moment they would take a firmer grip on the world's tail and flex their flabby muscles for the luscious twist.

ON reaching home, De Soto at once told his wife of his resignation. Alice was pale and ill. She listlessly acquiesced.

"You know best," she said.

"I plan to move out of this house tomorrow. It would be impossible to continue living here practically on the Foundation's charity. Let us move out to the country—I'll find a nice place."

"Can't we wait till—?" She did not complete the sentence. "It won't be long now."

He glanced at her, something like fear struggling with pity in his eyes.

"Certainly. We can stay here at least four weeks, if you really wish it. What does Brown say?"

"He hasn't called today. Doubtless he is busy."

"Yes, I remember. The Biological Society is meeting today and he is on the committee. Don't you worry. Everything will come out in fine shape. We can stay here indefinitely if you like—it was your home for years. Perhaps we had better."

"But your resignation?"

"Oh, that. I can do what I please with the trustees. If the worst comes to the worst, I'll buy the place. We're almost indecently rich, you know," he laughed, trying to cheer her. "That's why I resigned."

All her sparkle was dead. "I wish it were over," she sighed.

"There, there! You'll soon be as happy as a queen."

"Tell me, Miguel," she said slowly, "has my mind been right since that evening in the laboratory? Sometimes I seem to be living in a horrible dream. I fainted, didn't I? Do I seem rational to you?"

"Why shouldn't you?" he asked with assumed astonishment. "You are. These fancies are natural to you at this time. They mean nothing. Ask Brown when he comes, if you think I'm just talking to disguise the truth. What I tell you is cold, scientific fact, and he will back me up."

"I wish he would come."

"If that's all you're worrying about, it's soon cured. He will be here in fifteen minutes if he's still alive."

He left her to telephone to Brown's office. The doctor was at the Biological Society but was quickly reached and promised to come at once.

"She's imagining things," De Soto informed him in the hall. "Cheer her up."

"I'll do my best. They often get like that at this stage. It means nothing."

Thirty minutes elapsed before Brown rejoined the anxious husband.

"Well?" De Soto inquired.

"She is normal, except in one thing. Her mind seems to be straying."

"In what respect?" De Soto paled beneath his fast-fading tan.

"Sit down. I want to tell you something that I have never had the courage to confide to another living man—except Crane. He and I saw it together. If Alice is losing her mind, her delusions have a peculiar quality of truth. At least that is how I feel. Perhaps you will agree, when you have heard what I have to say. Ready?"

"I'm ready. You have seen the effect of the hardest rays on living tissue?"

"Yes. Crane and I together." In five minutes the doctor gave De Soto a sufficient account of what he and Crane had witnessed in the twenty million volt laboratory. "Those spiders," he concluded, "had evolved, bred and multiplied at a terrific rate in less than twenty-four hours. What accelerated their rate of evolution beyond all reason? Millions of years were compressed into those twenty-four hours. Where did those swarms of voracious brutes obtain their food? These are some of the questions that Crane and I think you can answer."

"Why do you think I should know? I wasn't connected with the Foundation when this happened. Although," he added with a bitter smile, "the solution of your problem is no more difficult than Crane's. He could not see how an anonymous letter might be delivered so as to arouse no suspicions among a pack of dull-witted drudges—cooks and waiters of the business world. Yours, I admit is a less trivial problem. Suppose things happened as you say they did. Where did those spiders obtain their food to make possible their greatly accelerated rates of evolution and development? They sanded the floor, you say, with millions of unhatched eggs. The mothers, at least, must have been well nourished. Did it never strike you that the same short wave rays which started the surge through all evolution for your spiders could also provide them with the necessary food? The nitrogen of the air, the carbon dioxide, the oxygen and the traces of noble gases were instantly aggregated into complicated organic compounds, based on the electrons positive and negative, under the influence of those rays. If matter can be utterly annihilated, or as 'miraculously' created out of the wandering protons and electrons by the hardest cosmic rays, might not the softer induce chemical changes, making food from the air? It is done even in our stupid laboratories. But it may all be a dream—I don't know."

"You admit that it is not unreasonable or absurd?"

"You wouldn't after seeing Wilkes' demonstration on the protozoa! A different set of cells were affected in your spiders; that's the only distinction. The hardness of the rays—or, if you prefer, the shortness of the waves in the radiation emitted, determines what cells will be stimulated or destroyed. You have guessed that much?"

"More, as you may see tonight, if you care to come to the public lecture. Wilkes is to talk again."

"And silence Balaam's ass?" De Soto suggested with a sardonic smile. "It can't be done. I tried this morning to answer several, and left them still braying. Still, if Alice is well enough and won't miss me, I'll be there to see the fun. She suspects that what came out of the closet was real, and not the creation of a sudden nervous breakdown?"

"Suspects? Alice knows that it was real. And what is darkening her mind is your silence. Why did you do it?"

"A pure blunder. I'm always blundering. Alice spoke and startled me. My sleeve did the rest. What happened was as much of a discovery to me as it was to her. Since that evening I have studied the effect exhaustively. If you care to inspect my menagerie, you will see that the last cage is empty. I'm done—beaten. I'll never use the chloroform bottle or the oxy-acetylene torch again. Nature has got the better of me at last."

"But what on earth did you think you were trying to do when you blundered?"

"As you refused to help me," De Soto replied grimly, "I tried to help myself. If I could control evolution in one direction, why not in the opposite? Then I could undo what you, as well as I, believe may have happened."

"And you found you could not pass up or down the scale at will?"

"No longer. Ten months ago I could have played on it like a flute—and I did. Now I have lost my capacity. Can't you see that I am degenerating? Look at my right eye. Is that blue wedge a normal change in a healthy man?"

Brown peered into the affected eye.

"When did this begin?"

"Nearly five months ago—more or less. Can you explain it? No? Neither can I. Nor can I account for my washed-out feeling. Do you notice my color? And the deadness of my hair?"

"All that is merely lack of tone due to overwork and worry. As soon as Alice is safely through you will be as good as ever."

"Better," he said bitterly. "That night when she saw the thing, I told her that I was going back to the dark place where I was born. Your account of what you did with those spiders is like a hand pushing me into the darkness. Something will rush out of it presently and destroy me. But before it does, I shall see the light I have been groping after for months." He brooded in gloomy thought for some moments without speaking. "Promise me," he said, looking straight into the doctor's eyes with a flash of his old dominance, "that you will take care of Alice whatever happens to me. I have loved her, and that has been my ruination. All of my business affairs are in good order. She will be wealthy. See that she is not fleeced and keep her from marrying some scum who wants only her money."

"Look here, De Soto," the doctor retorted quietly, "you mustn't think of anything like that. In spite of all that she half suspects, you are still her one reason for living."

"But if I die—naturally?"

"You won't, for years yet. However, I'll face it. If anything happens to you, I will see that your wife gets a square deal. Now let us talk of something more cheerful. Coming with me tonight to hear Wilkes' paper? There has been nothing like it in the history of science. Not a soul but Crane, Wilkes and me, and possibly you, has any idea of what the old chap is going to spring on the skeptics. We have played at least one bar on your magic flute."

De Soto brightened. "I'll be there," he laughed. "But wait till you hear the full orchestra."

"When?" Brown demanded.

"Thirty years from now. It will begin four weeks from today."

"What do you mean? Have you—."

"Wait and see. I may be dreaming."

"Then Crane and I must awaken you," the doctor retorted. "Don't fail to come tonight."

"I won't. *Au revoir.*"

THE auditorium for the evening lecture was crowded. De Soto found a seat in the rear. Brown presided, to introduce the speaker. News had leaked out through the committee that the address of the evening, "New Light on Evolution" was likely to prove exciting. The newspapers had spared neither conjecture nor innuendo to advertise the meeting. Some even hinted that the long-missing link was at last to be exhibited to shut up the Fundamentalists. Others recalled the incident of Balaam's ass and wondered whether he would be present in person.

At eight fifteen exactly, Brown briefly introduced the speaker. This time Wilkes had a manuscript in his hand. He began by dryly reviewing the theory of evolution. Sensation hunters yawned and shuffled their feet. Wilkes paid not the slightest attention, but continued to bore through his dry-as-dust argument like a beetle in a board. At last—after forty minutes—he had finished his preliminaries. Tossing the manuscript aside, he squared his shoulders, adjusted his cuffs, and let loose without notes.

"All that, ladies and gentlemen, is old stuff. You learned it in the grammar school—or if you didn't, you should have. Evolution is less a theory than a description. Does it assign any *physical cause* for the origin of species? It does not. The facts which it is alleged to coordinate are almost as complicated as the theory which strings them together. Compared to any of the greater mathematical or physical theories, it is rather a childish effort. It does not go to the root of the matter."

The papers reported the next morning that there was considerable disorder at this point of the professor's address. Undismayed by the boos and jeers of the scientific fundamentalists, Wilkes raised his voice and kept on, disregarding Chairman Brown's frantic appeals for order.

"Old stuff!" he shouted. "As old as Democritus and as dead as Lucretius. Metaphysics, ladies and gentlemen, metaphysics! Until we can control the course of evolution in our laboratories we are no better than Aristotle with his cock and bull."

"Can you control it?" a ribald voice from the back of the hall demanded.

"Order!" Brown snapped. "There will be an opportunity to ask questions after the lecture."

"Since the disorderly gentleman in the rear has asked a pertinent question, I will make an exception, and answer him. No. I can not control evolution."

"Then what do you think you are talking about?" an infinitely dismal, sepulchral croak from the gallery inquired.

"Listen, and you will find out. Another interruption and I leave the platform."

There was a dead silence. A man in the front row, showing a disposition to chatter, was promptly squelched by his wife. Wilkes continued his extempore discourse.

"Facts first, fun later. Before you will be in a fit state of mind to appreciate my clinching argument and enjoy the fun—such as it is—I must get some hard dry facts into your heads. It may hurt those unaccustomed to using their brains, but nobody will be seriously injured.

"First, there is the cause, the physical reason for evolution. What is it? I don't know, and neither do you. Like Newton, 'hypotheses non fingo'—I don't indulge in wild guesses. But, like all scientists, I guess as Newton did. Then I check up my guesses against the facts, or against the experiments predicted by the guess.

"In this instance," the professor continued with evident relish, ignoring the drowsy blonde at his right in the third row, "in this instance the ascertained facts of paleontology are indisputable to all but Fundamentalists. We human beings are mammals—the female suckles her young, and our young are born alive. Reptiles are not mammals. For one thing their young are born only half alive, as eggs. Nor are birds mammals. Yet birds and mammals both sprang from the reptiles. That is the incontrovertible record of paleontology.

"Circle squarers, believers that the earth is flat and that the moon has no rotation, swarm in our midst, as the late Professor Tait observed on an occasion similar to the present. Modern statisticians have found that one person in five thousand believes he can square the circle, one in five hundred that the earth is flat, and one in five that the moon has no rotation. Therefore, I conclude, what I am about to say will be distasteful to my present highly cultured and intelligent audience. After all, science *may* be wrong, and the moon *may* be made of green cheese.

"Any human being who cares to go back far enough will find his family tree to be a mere twig on the greatest tree of life this earth has ever known, that of the reptiles. In short, the reptiles were our ancestors."

A prolonged hiss from the third row broke the thread of the professor's discourse. Wilkes paused appreciatively until the objector ran himself out of steam.

"Ah," he resumed, "I perceive that evolution has still a long way to go for some of us. To continue what I was saying before the gentleman in the third row obliged me with a practical demonstration. Suppose we *could* control evolution, both backwards and forwards. Imagine first that we can reverse the natural progress of man, and that we can do it at a greatly accelerated pace. In half an hour we should see ourselves chattering in the trees with our cousin apes; an hour would find both us and our cousins on familiar terms with queer little mammals that none of us would recognize as our great, great grandfathers; and finally, after about two hours of this prodigiously fast sweep into the 'backward abysm of time,' you and I would behold a strange and pathetic sight. We should see a bewildered colony of reptiles, their short, feeble arms clutched about their narrow bosoms, contemplating in horror and awe their unnatural broods—the first mammals. Could these unhappy parents look far enough into their misty future, they would see the last of their kind being mercilessly exterminated by the lusty descendants of these first, puny mammals.

"Before turning to a brighter picture, let us glance at another, more flattering to our human conceit. Suppose a common hen, or any other bird, could be sent back along the path which it had taken from the beginning of time. It would reach the reptiles much faster than we. Almost in a quarter of an hour—at the same relative speed as our own trip to our family tree—the hen would perceive that its feathers had given place to scales, and its toothless bill to a vicious, horny mouth crammed with long, sharp teeth.

"Now for the brighter picture. Accelerate the rate of evolution forward. What becomes of us? Ultimately, of course, we shall probably become as extinct as the great reptiles from which all our kind originally sprang. But, on the way to extinction there is one not wholly unpleasant prospect. We shall subdue the physical forces of nature almost completely, and the entire race of mankind will become incomparably more intelligent than it now is, with a greatly heightened joy in living. The discontented will have perished. That they may be noble in their discontent does not concern us. They will have gone the way of the dodo long before the race begins to live, for the simple reason that discontent is a destroying influence. It is nature's anaesthetic to drug the misfits into a readier acceptance of the death which is their one answer to a world with which they are unfitted to struggle. Many of them may be remembered for great work, for a little time, but they themselves, and in the end their work also, will perish.

"That is at least a not improbable conjecture. A second possibility that the future holds for us is equally obvious. Just as the mammals sprang from the reptiles, so from the mammals in turn, man included, may spring a totally new race of creatures. It is even possible, from minute examination of the germ cells of our own bodies, to predict in its broadest outlines what the race of our successors may look like. I shall not bore you with these speculations now, as facts that can be seen, heard and handled are more convincing to those who have eyes to see, ears to hear, and fingers to touch.

"Six months ago, I showed before this Society a series of drawings and photographs from life, in which it was proved that my associates and I had succeeded in compressing the whole evolution—millions and millions of years—of certain species of the lowest type of animal into a few hours. Those protozoa, beginning with the humblest, passing to the highest, and again sinking to the very lowest through innumerable generations, all within the short span of less than twenty-four hours' actual experiment, should have convinced those capable of human reason that my claims are valid. Was anyone convinced? No. 'Though one rose from the dead,' they would not believe. Hence I have prepared a more convincing demonstration, this time in the opposite direction. Rather, my friend has prepared such a proof; I am merely the showman. He has a professional reputation to lose; I never had one worth considering.

"Ladies and gentlemen, I now present you with a proof that we have succeeded in reversing evolution. What I am about to show you illustrates our process as applied to birds. If we are able, as we claim, to reverse evolution for the birds, we should be able to produce the prehistoric reptiles from which the birds sprang.

"Our starting point was a common brown hen of the Buff Orpington variety. Until she was subjected to the proper influences, she laid excellent eggs, many of which were eaten and enjoyed by my collaborators. They were normal hens' eggs. After our experiment, she began laying very small eggs. They were not shelled, but encased in a porous membrane like tough skin. Eighteen of these abnormal eggs hatched. I now show the reptile which hatched out of one of those eighteen eggs. It was a few days over four months of age when it died. Mr. Chairman, if you will have the alcohol tank wheeled onto the stage we can proceed with the demonstration."

AS one the audience rose to its feet. Those in the rear stood on the seats; those in the very front were restrained by guards from climbing to the platform.

"Everyone will have an opportunity to see the reptile," Wilkes shouted. "Please do not come up to the platform until the guards permit you to file past."

An oblong box like a coffin, draped in gray tarpaulins, was now wheeled onto the stage beside the speaker's stand.

"A little to the right, so that the whole house can see without interference," Wilkes directed. "That's it."

With a pardonably dramatic gesture, the professor unveiled his masterpiece by flapping off the tarpaulins.

"There!"

Submerged in the glass tank of alcohol a long, lemon-yellow monstrosity, like a huge lizard with an overdeveloped head, lay supine on its spiny back. The enormous head rested with its flat occiput on the bottom of the tank, its long, gaping jaws almost projecting above the level of the alcohol. From tail tip to head the reptile measured between eight and nine feet; its evil jaws could have crushed a young pig at one snap. The teeth, in double rows on both upper and lower jaws, might easily have crunched to fragments the bones of a large dog. The hind legs, like a crocodile's, were muscular and well developed; the front, mere fins with claws, were clasped pathetically over the narrow chest in the eternal resignation of death. The skin could hardly be called scaly. Rather it was a compact weave of triangular warts, each about the size of half a postage stamp. About the rigid jaws of the dead reptile lingered the frozen remains of a sardonic smile, as if the creature had looked both before and after, and was now as wise as a god.

Seeing is said to be believing. Those who assert that it is do not know either the scientific mind or the fundamentalist. The pickled reptile was received first with the silence of incredulity. Then, in ludicrous unison, a rhythmic chant of "Fake! Fake! Fake!" shook the auditorium. The crowd filed up to the platform, hustled by the guards, passed before the glass tank, saw with their own eyes the yellow monstrosity in the alcohol, and doubted. This is not set down in any critical spirit;

it is merely recorded here—as it was in the late extras that night—to show that the average human being is not the sort of fool who believes that seeing is believing. The skepticism of the crowd did it enormous credit. Through all that unsympathetic hour, while the irreverent humans filed past, the prehistoric reptile smiled his enigmatic smile like a cynical Pharaoh lying in state. He knew all evolution now, both forward and backward; his belated descendants some day would be as omniscient as he.

As if to underline the professor's remarks, the huge mass in the cage suddenly became a spitting fury. Hurling herself against the bars of the cage, she slavered and screamed at the audience in an access of reptilian fury.

At a gesture from the chairman, the crowd at last resumed their seats. Brown made a brief address.

"In conclusion, I may say," he remarked, "that Professor Wilkes is not surprised by your reception of his evidence. May I ask for a show of hands? Those who consider this thing in the tank as substantiating, in some slight degree, Professor Wilkes' contention that evolution may be reversed by man, will please raise the right hand."

Several hands—at least a dozen—shot up. Before the meagre count could be taken, an indignant voice claimed the privilege of the floor.

"Mr. Chairman!"

"Mr. Barnes?"

"I must protest againt a meeting of the Biological Society being turned into a revivalist experience orgy. Professor Wilkes has tried to foist upon the lay public a gross imposture. His so-called reptile is dead. I deny that any such reptile ever lived. The majority of those professional biologists now present—whose spokesman I have the honor to be—pronounce the yellow thing in that tank to be an extremely able fraud. Whoever has spent weeks, possibly months, in manufacturing that fake, might well have employed his talents to better advantage. That it is an almost perfect restoration of an extinct reptile of the middle period of the great reptilian race, which flourished on the earth ages ago, we do not deny. We merely assert that it is a forgery."

When the applause, foot-stamping and shouting, which greeted this fearless indictment of the exhibit in question as a bold fraud, had subsided, a resonant voice was heard claiming the chair's attention.

"Mr. De Soto?" Brown invited.

The whole audience turned to stare at the world-famous inventor standing up at the back of the hall. Until now he had passed unnoticed, save by those in his near neighborhood. What would he say? Light into the audacious Wilkes as Barnes had done?

"May I ask how Professor Wilkes induced the change in the germ cells of his hen to obtain this result?"

"As Professor Wilkes' paper has been received unfavorably," Brown replied, after a consultation in an undertone with the professor, "he prefers not to state for the present."

"In that case, Mr. Chairman," De Soto replied, "may I have the floor for five minutes?"

Brown's decision was drowned in an uproar. "De Soto! De Soto!" the crowd chanted. Brown at last got order.

"Mr. De Soto will take the platform in a few minutes, if he will be so kind. In the meantime, Professor Wilkes wishes to add a few remarks. May I ask you to keep your seats while he is speaking? Professor Wilkes."

The professor began in his driest voice.

"Any good scientist enjoys being called a liar by his brother scientists. It puts him on his mettle. I have to thank Professor Barnes for having performed that service for me. You will recall that I said eighteen of the reptile eggs produced by that brown hen hatched. One of the reptiles died a few days over four months of age. From the beginning he was the puniest, and we despaired of keeping him alive for a week. In spite of all we could do for the poor creature, he died. I, myself, sat up with him anxious nights, trying to nurse him back to health. Had Professor Barnes lavished his own maternal care as I did mine on that unhappy child of the prehistoric past, he would not scoff at its pitiful inadequacy now. That reptile, ladies and gentlemen, was kindly and affectionate—provided you kept out of reach of his teeth. I grew to love him more and fear him more than I love or fear Professor Barnes.

"'Eyes have they and see not; ears, and hear not.' Of such are Professor Barnes and all his followers, the fundamentalists of biology. They call my poor dead friend a fake. I wish they were right, for then I might, as an artist, rival nature herself."

"You haven't answered him," a hollow voice from the second row suggested.

"You are right," Wilkes admitted. "I cannot answer him. His kind is unanswerable. For the rest, however, I have a little surprise, as a reward for their patient faith. Remember, eighteen eggs were hatched. One of the reptiles died; you see him here. What of the remaining seventeen?"

"Yes!" Barnes shouted, leaping to his feet. "What of them?"

"Kindly address your remarks to the Chair," Brown suggested acidly. "Professor Wilkes, what of the remaining seventeen?"

"They are alive and well," Wilkes replied simply.

"Show them to us!"—This from the audience at large.

"Unfortunately I cannot do so," Wilkes admitted regretfully.

Shouts of "Fake!" all but drowned the disappointed "Why?" Ignoring the former, Wilkes satisfied the latter.

"Because this stage would not hold all seventeen of them, or even six. They are not pleasant to handle outside of a steel cage. So I have brought only one, which my friend, Doctor Crane, will now show you. Doctor Crane."

Oh's and ah's bathed the professor like incense. He had scored his point, and Balaam Barnes was about to be silenced—at least they hoped so. For the average audience, scientific or other, is about as fickle as a flame.

The gorgeous purple velvet curtains parted at the back of the stage, revealing Crane in the act of bossing eight brawny workmen who tugged and hauled at an enormous cage of steel bars mounted on two low trucks. The cage was wheeled into the center of the stage; Crane withdrew with his workmen; the purple curtains closed; Wilkes followed Brown from the platform, and the guards braced themselves for the onset.

AT first there was silence. Then fear. Then astonishment. Then a foolish, fluttering applause, that died instantly. Again silence, tense and heavy with fear. The sluggish reptile in the cage raised its enormous head, stared for an uncomprehending five seconds at the pink and gray sea before it, regurgitated, and unconcernedly turned away. As the horny lips snarled back, the breathless spectators saw two double rows of cruel teeth, sharper than a shark's and as long as a sabre-toothed tiger's, bared for the attack.

"About six and a half months old," Wilkes remarked dryly. "Has Professor Barnes any comments?" The deathly silence remained unbroken. "If not," Wilkes continued, "you will presently notice a characteristic odor. Those of you who have ever smelt a large living snake, say a boa constrictor, will recognize the odor in a general way. This, you will admit, is similar, but much more intense, with qualities of its own. You are smelling, ladies and gentlemen, the same smell that paralyzed our mammalian ancestors with fright when they tried to hide from their reptilian parents in the reeds. Familiar, isn't it?"

There was no reply. The indifferent brute with a brain no bigger, perhaps, than a baby sparrow's, raised his head and preened its scales. Along its spiny backbone, and over its massive flanks, a riffle of triangular flecks of bright green passed lightly, like the sudden rubbing of an armor of artichokes the wrong way by an invisible hand. The crowd shuddered. They had seen birds do that. With a sudden movement of its sinewy neck that was almost graceful, the squatting brute ruf-

fled the upstanding scales under its armpits, rapidly combed its backbone with its chattering teeth, shook its whole body luxuriously, and settled down to indolent ease. A cold, foul odor wafted over the audience.

"I refer you," Wilkes remarked from his station by the stage steps, "to any competent treatise on paleontology for the original of this reptile. It is well known. At least we think it is. When full grown, it will be as tall as a giraffe and as bulky as an elephant. This is one of the later species of reptile. The great ones had already begun to fade from the screen of evolution when this one thrived. Notice the degeneration of the thorax. It has an obviously inadequate lung capacity. The hind legs also show weakness. On the flanks—not where one would naturally expect to find such things—you will see two serrated excrescences. These are the rudimentary wings trying to break through the tough armor of scales. The wings, of course, did not originate in this way. What you see is merely one of nature's innumerable hit and miss, blunder and succeed methods of evolving a new species. The wings that finally came in were of deeper origin—in the mutated chromosomes of our friend here. Her—this reptile is a female—her germ cells contained the irresistible mutation that finally gave us the birds, including the brown hen from which this terrific beast was born.

"I call her terrific," he continued, "because I personally am very much afraid of her. You observe that she is just like her dead brother in the glass tank here, except that she is five times his size in linear dimensions, and therefore one hundred and twenty-five times his bulk. Before I state why I am afraid of her, let me assure everyone in this audience that neither I nor any of my associates has ever fed her a living animal. The pigs and calves which so far have kept her alive were duly slaughtered and butchered before being introduced into the cage. A pet cat belonging to one of my collaborators chanced to stray within reach of the cage one day when this reptile was much smaller and could get her head through between the bars. The cat was nipped. It died in four seconds. Now, for all that paleontology can tell us, we do not know whether or not this prehistoric reptile was venomous. From what happened to the cat, I suspect that it was. We shall have to wait until one of the seventeen dies. For sentimental reasons I do not care to dissect my dead friend in the tank. I shall ask you not to attempt to inspect the reptile on the stage. She may be dangerous."

As if to underline the professor's remarks, the huge mass in the cage suddenly became a spitting fury. Hurling herself against the bars of the cage, she slavered and screamed at the audience in an access of reptilian fury. Women fainted and were carried out; men stood their ground and tried not to show the white feather under the intolerable, nauseating stench which filled the auditorium as the raging half-snake, half-bird, lashed herself with her muscular tail and clawed at the steel bars with five-fingered hands that were strangely human.

"Take her out!" Brown shouted from the floor. Crane rallied his crew. Three minutes later the hissing screams were suddenly cut off by the closing of steel doors behind the purple curtains. Brown remounted the platform.

"Mr. De Soto wishes to say something," he announced.

The crowd sat down in dead silence, and De Soto walked to the front of the hall. Refusing Brown's invitation to mount the steps, he began speaking in a low voice, which carried to the farthest corners of the galleries.

"I state facts," he began, by way of introduction. "Several months ago I began to experiment on living tissue with high-frequency, short-wavelength X-rays. The results were encouraging. I used what knowledge I had gained from these preliminary experiments to predict what must happen under the influence of cosmic rays—the rays of shortest wavelength known to science. These rays will penetrate forty feet of solid lead. With this penetration they should be capable of affecting the smallest cells in all animals—insects, mammals, protozoa, man. By properly modulating the wavelengths of the rays sprayed upon the chromosomes, I found it possible to accelerate normal evolution or to retard it; to produce mutations—the creation of new species, such as mammals from reptiles—or to inhibit them. Perhaps here I overstate; my completed experiments do not fully justify my last assertion. I undertook, many months ago, to put my theories to a crucial test. Unfortunately certain accidents, due entirely to my own carelessness, make the outcome doubtful. I can only await the decisive answer which, I anticipate, will be given within the month. You agree, Doctor Brown?"

"I think so," Brown assented in a voice that was scarcely audible. De Soto nodded and went on.

"It is possible, I assert, to control evolution in both the forward direction and the backward. Professor Wilkes' two exhibits—that of six months ago with the protozoa, and that of tonight with the hen-reptile—put this beyond dispute. You have seen it with your own eyes. Even Professor Barnes, legitimately skeptical, has no further objection to offer.

"All this, ladies and gentlemen, is purely academic. It is of interest only to professional biologists. Of what application can it possibly be to you?

"Let me tell you. If we can control evolution; if we can hasten nature forward at the rate of a million years in one of our human years; if we can perfect our race as Professor Wilkes has predicted, who will profit? Who? Is it worth perfecting? I confess that I do not know.

"Suppose you were given the chance to perfect yourselves. Would you take it? I think not; for no one of us knows what perfection is.

"Suppose again that you were offered the opportunity of settling all of your problems, once and for all, within one generation—thirty years. Would you take it? No. Why? Because you are human and blunderers, of which I am one.

"Suppose, lastly, that the decision was made for you. Would you be happy? I doubt it. Stupidity, or human kindness, if you like, is the one thing that distinguishes us from that brainless reptile which Dr. Crane just showed us. For to be stupid is to be kind, and to be kind is to be stupid. Do not think I am bandying epigrams. I am not. Reflect. Is it not true—humanly true—that every time any one of you has given way to a decent, 'human' impulse, he has kicked himself later for having been a fool? Think of it: kindness equals stupidity; stupidity equals kindness. If you doubt it, what keeps your hospitals for paupers full, your homes for the aged prosperous, and your institutes for incurables jammed to the doors? Reflect, I say; if you wish individuals to persist, when they should have perished; if you wish the race to perish, when it might persist, be kind, scorn intelligence, and choose an evolution which will send you back to the reptiles. I personally have no choice. Either alternative is 'a tale told by an idiot, full of sound and fury, signifying nothing.'

"But, ladies and gentlemen, your decision has already been made. Four weeks from today you will know what has been decided for you. It is neither reptile nor superman, neither back to the brutes nor on to the gods. In the meantime——"

Certain light-witted members of the audience whose attention was already wandering, noticed Doctor Brown hurriedly follow a page off the platform and disappear behind the purple curtains. Joyously anticipating that

the she-reptile had bitten and killed one of her keepers, they sat back, waiting for the chairman to reappear and announce the welcome tragedy. They were disappointed. Within a minute Brown was back, but on the floor of the auditorium. They saw him pluck the ranting speaker by the sleeve. But they did not hear what the Doctor whispered in De Soto's ear.

"Come with me at once. Alice——"

THEY were in a taxi before the audience realized that it was deserted. The second extras speculated on the significance of a scientific meeting—especially one of this importance—being abandoned without ceremony by speaker and chairman, but they drew no rational conclusions.

By noon the next day a verbatim account of that historic meeting, with the word for word reproduction of De Soto's speech, was printed in heavy type on the front page of every important newspaper or journal of the civilized world.

De Soto's son was born an hour after the meeting broke up. An hour later Alice was dead. Thirty minutes after Alice died, Brown reeled into Crane's apartment.

"She is dead, thank God! It was born alive."

"What is it?"

"I don't know. It is not a mammal. It is still alive. De Soto has it."

CHAPTER XIII

His Last Will and Testament

POOR old Wilson had not prospered since his lodger deserted him. The all but deaf, half blind old man had puttered about for months in his inefficient endeavors to find a successor for the departed Bork, but without any luck. Finally he abandoned the effort to rent his shabby room, and resigned himself to fare a little more Spartan than what he had been accustomed to, in the days of his poor luxury. Bacon no longer was a possibility. Flapjacks, potatoes and the scanty greens from his own garden kept his sleeping old soul in his lethargic body. The neighbors became alarmed lest the old man die alone and thus smirch their shabby, decent street with the scandal of man's inhumanity to man.

One morning, long after his needy friends had given up all hope that old Wilson would ever again be on speaking terms with bacon and prosperity, he ambled proudly over to his nearest neighbor's with the glad tidings that the room was at last rented.

"Who to?" the gossip bawled in Wilson's better ear.

"Eh? I'm hard of hearing."

"Who did you rent the room to?"

"Durned if I know. Some fool. He paid in advance. Say, is that a ten-dollar bill? My eyes ain't what they was."

Being assured that it was, old Wilson doddered off to the corner grocery and purchased a whole side of bacon. For four weeks the neighbors saw nothing of old Wilson or of his new lodger, although they kept a sharp watch for the latter. Finally the theory that the new lodger was a night worker, leaving the house after dark and returning before dawn, was generally accepted. Substantially it was true. The lodger left his room only between the hours of midnight and three in the morning, to purchase at cheap lunch counters and bootlegging joints the necessities of life. Not only was the shabby neighborhood totally unprepared for the tragedy which suddenly burst upon it, but also the whole world. At the end of the fourth week, when old Wilson began fretting lest his invisible lodger overlook the vital matter of the rent, the horror happened, without the slightest warning, at midnight of the last day of the fourth week. Fifteen minutes after it happened the tragedy was broadcast by telegraph, cable and radio to the farthest corners of the civilized world. And it was broadcast barely in time to save the human race from a similar fate.

The police were on the spot five minutes after the first inhuman scream shattered the dog-tired silence of the mean neighborhood's midnight. Even old Wilson heard that cry from hell. The siren of the police car shrieking through the night was not more shrill. The officers battered down the door of the lodger's room just as the last sounds of agony expired in a dying groan. Entering with drawn revolvers, they stumbled over a litter of empty bottles, dirty papers and fragments of half-eaten meals. The man had died defending himself against terrible odds. When they saw what had destroyed the victim, they froze where they stood. One officer recovered his senses and raised his arm to take aim. The captain knocked the automatic aside and the volley of shots went wild.

"Don't shoot! Get the envelope in his hand."

At the risk of his life the officer darted forward, snatched the envelope from the dead hand, and followed his shaking companion from the room.

"Get all the furniture in the house and block up the doorway!" the captain shouted. "Rip off the doors downstairs and bring them up. I'll stand guard."

While his men tumbled downstairs to fetch everything heavy that the shack contained, the captain glanced at the letter. It was stamped and addressed to Dr. Andrew Crane at the Erickson Foundation. Across the envelope "Private and Personal" was scrawled in red ink.

"Get this man on the telephone and tell him to come here at once," the captain ordered the first man who staggered up under a load of furniture.

Crane was located at his own address. The officer repeated the street and number. "Come at once."

"I'll be there in three minutes." Crane was as good as his promise. "Bork's old place," he muttered as he gave his machine the gas and shot into the street. "What now?"

He soon learned. The captain handed him the envelope and ordered him to read it. The meat of the letter was on the first page. Crane read it at a glance. Not bothering to look at the rest of the bulky manuscript or to inquire what had brought the police to Bork's old lodging, he stuffed the letter into his pocket and bolted for the stairs.

"Come back!" the captain shouted.

"Can't. This must be broadcast at once."

"Halt!"

The front door slammed after Crane just as a bullet flattened itself on the brass doorknob. He was roaring up the street before the second shot overtook him, missed him by an inch, and shattered the windshield of his low, open car. Shooting round a corner he put his pursuers hopelessly out of the running. Four minutes later he was seated before the broadcasting keyboard which the experts of the Erickson Foundation had especially designed at De Soto's suggestion for a purpose totally different from that for which Crane now used it.

WITHIN half an hour his short, insistent message had girdled the globe. Newspaper broadcasting stations in those countries where it was still daylight or early evening took up the desperate message and drowned out all programs and other unnecessary interference. Where the radio failed, cables and wireless got drowsy engineers, sleeping editors and snoring politicians out of bed at unearthly hours, from Senegal to Capetown, from Shanghai to Valparaiso.

In the less sophisticated countries fire sirens shrieked through the streets in the dead of night; criers followed them up, yelling to the startled people to rise at once and destroy the plants, root and branch, of the newly constructed stations of the Universal Power Transmission Corporation. They needed no urging. De Soto's wild speech four weeks previously had been translated into every living language, popularized, and made accessible to the people of all countries. The telephotographs of Bertha's brood were in every newspaper office of the world two days after Wilkes had exhibited one of the seventeen living monsters that were now world-famous. Crane's selling compaign had been ably engineered for him before he ever sat down at the Erickson keyboard. The human race, or at least the civilized part of it, was already prepared for the hell about to burst upon it, which one man, who might easily have been shot by a stupid police officer, averted. Eight hours later the damage would have been beyond human repair.

Martial law in the more civilized countries made a feeble, ineffectual attempt to hold the raging mobs in control. Many were shot down in cold blood by the rifles and machine guns of the militias that vainly struggled to protect the property of an alien corporation. Property, to the custodians of human life, is more sacred than human life itself. Capital had been heavily invested in their bailiwicks. What did it matter what the scientists said? Money is money; business is business; and a fool is a fool the wide world over. Therefore the devoted members of the militia were butchered by sheer weight of numbers before humanity prevailed. For the argument of the people in this instance was beyond political or international palliatives. The deepest, fiercest instinct of the human race was about to be violated.

Instinct fought; civilization for the moment went under. From Senegal to Capetown, from London to Leningrad, from Shanghai to Valparaiso, from New York to San Francisco, and in every corrugated iron settlement of the earth's wilderness, a sombre torch of destruction flared up against the midnight skies or darkened the silver glare of the age-weary, tolerant sun. The vast plants of the Universal Power Transmission Company were destroyed the world over by flames and bombs four hours after Crane broadcast the first call to arms. Universal and all of its backers were ruined.

Thus far had the Erickson triumphed, but not in the way De Soto had predicted. What of the counter-attack De Soto prepared for the trustees? Crane destroyed that also. Before daybreak both the Erickson and the Universal were a total loss. One was destroyed outright with all of its equipment and all of its expensively captured markets; the other receded at one step to its comparatively harmless monopolies which it had held before De Soto tempted it with a vision of all the kingdoms of the earth. And what, through all this, of De Soto, the unprecedented world genius who had precipitated it all?

To appreciate De Soto's motives, historians must take account of his own tragedy. Brown would have delivered him from the worst at the last moment—when it was too late. Alice should never have been permitted to bear a son to the husband she loved. This Brown admitted—when the son was born. There is a simple surgical trick, a quick snip of a pair of scissors, which is permitted in such circumstances to even the most conservative obstetrician. Brown would have used this, but the father forbade.

"Will she live?" he asked, referring to Alice.

"Only a few hours, at most."

"Then I refuse to have this thing put out of the world. It is mine. My first intention was right. So far as I am concerned, Alice is already dead. This episode in my life is ended."

De Soto was not with his wife when she died. He had already fled the house, taking with him his newborn son wrapped in a quilt.

For four weeks the world speculated on the fate of its greatest inventor, Miguel De Soto. Gradually the theory was accepted that he had destroyed himself in the sudden madness of grief when his beautiful young wife died. Brown did this much for the principals in the tragedy which he might have aborted: He signed a death certificate for both the mother and the child, stating that the latter had been stillborn. The remains were cremated within thirty hours. Only Kent and the doctor witnessed the last. Brown of course told the heartbroken father that Alice had died naturally—as, indeed, she had. Nature, however, is hell.

The trustees of the Erickson Foundation mourned their brilliant director for two days. Then, convinced like the rest that De Soto had committed suicide, they reverently forgot him in a bronze tablet in the president's office, inscribed to "Miguel De Soto, Benefactor of Humanity and Founder of Our Fortunes." Finally, they decided not to canonize their Aladdin for twenty-six days, until the second phrase of their inscription would be an overwhelming fact.

As the days passed and no trace of De Soto was discovered by the police, Crane and Wilkes agreed with Brown that the unhappy father had indeed destroyed not only himself but also his offspring. Had he been alive, they argued, he must certainly have given some sign before his wife, whom he had loved, became an urnful of ashes. The three friends attended to the immediate present, and let the future go for the moment. De Soto's threat, that the world within four weeks would begin to solve its greatest problem, might be only the defiant gesture of a defeated maniac. They set about consolidating their definite scientific gains, writing up the voluminous report on the protozoa, giving the full history of Bertha and her reptilian brood, and finally putting forth the bold hypothesis that all of these apparent miracles were nothing more than the orderly progress of nature, hastened or retarded several billion-fold by the control of radiation in relation to the germ cells of living animals.

Requests from every scientific center of the world for one of the artificially evolved—or rather, devolved, reptiles poured in by the bushelful, and less presumptuous academies begged for at least one microphotograph of the perfected protozoa. The latter were easily satisfied. For months Wilkes had been preparing a new treatise, which was now published and sold as fast as the presses could print it off. The more convincing proof, the seventeen living reptiles and their pickled baby brother, were started on a world tour two days after Alice died and De Soto disappeared. It is well that they did, for when it became necessary to destroy billions of dollars' worth of property, the public of at least one continent was thoroughly educated visually—and the world at large had seen hundreds of photographs of its grandparents.

THE world was educated in one detail. When Crane began broadcasting the warning that unless the people of all countries at once destroyed the plants of the Universal Power Transmission Company, their own *children,* not possibly their great, great grandchildren, would be very similar to those reptilian grandparents now touring the civilized world, the warning struck home at once. Half an hour of wireless transmission by means of the new devices, Crane asserted, would suffice to change the germ cells of every living human being permanently. Thirty minutes, no more, he declared from the Erickson keyboard, would hurl every child

born of parents then living back to the reptiles. Mothers would bear, not snakes, but things with legs and gigantic heads like those which the hen had brought forth. These, however, unlike the hen's, would be born alive and not from the egg. At one stride the race would retrogress hundreds of millions of years to its premammalian ancestors. This, it was broadcast, would be the inevitable outcome of the first use of the new "Universal" system for the wireless transmission of electrical energy. The unborn would be born reptiles; the fruit of every union not yet consummated, for as long as the present generation lived, would be a race of carnivorous reptiles, possibly venomous.

The preservation of the species is a deeper instinct, even with the individual, than is the preservation of self. Bertha's fellow hens pecked her to death when their instincts taught them that she had betrayed the birds to the reptiles. Likewise when Crane, desperately transmitting De Soto's unintended warning from the Erickson broadcasting keyboard, spelled out the impending degeneration of the human race, instinct prevailed. Machine guns, gas and tear bombs, flame-projectors and human militia melted like smoke before a hurricane, when a race about to be outraged surged over the merely human defenses created by unlimited wealth. In four hours Universal was wiped out; the race was saved.

Money dies hard—if it ever dies. Crane, still sweating over the switchboards at nine in the morning, suddenly had a vision. Business, he saw in one transcendent flash of revelation, is immortal. Man may have a soul, the race a purposeful mind, but lucre has a belly and it has all-consuming powers of digestion and assimilation.

For seven hours the night and early morning had been turned into clanging day. Extra after extra headlined the progress of the world riots to excited householders as Universal's gigantic plants went their predestined way by bombs and flames. One shrewd go-getter after another hugged himself in the chilly dawn. These keen men of affairs had backed De Soto and the Erickson. Their money was safe. Had the Erickson been bombed? Not on your life! Were its trustees panicky? Again, not on your life. They knew what they were talking about when they cautiously released a "preliminary announcement" two days before the present fiasco of Universal. The canny trustees had presaged the collapse of the Universal. They themselves, they hinted, would broadcast the story of an invention which would scrap Universal in half an hour. Was this the prophesied revelation?

It was not. For two hours the perspiring president of the Erickson had been trying to distract Crane's attention. Crane stuck to his job, methodically transmitting the whole of De Soto's last will and testament. Universal was already destroyed; what Crane now did was a labor of hate. He broadcast the truth as De Soto's twisted, infinitely clear mind had conceived it, in the vain hope that common sense might at last prevail. He was deceived.

Unable to restrain himself any longer, the president roughly brushed Crane's hands off the keyboard.

"What do you think you are doing?" he demanded, red in the face, the veins on his neck and temples swollen to the bursting point.

"Putting a crimp in you, if you want to know," Crane grinned. "Get out of my way; I've got to finish this."

Appeals to gratitude for past benefits received, threats of arrest, promises of any reasonable sum up to fifty million, tears—almost all of these were offered and rejected in the brief space of ten minutes while Crane rested and the president wallowed.

"The man was crazy," the president all but sobbed as his final argument. "You know as well as I do that he had been out of his head for months. We've bluffed off the Universal. The world is ours! Fifty million if you stop broadcasting. You shan't——."

"Steady!" Crane ordered. "Hinder me now and I'll—. Sit down! Wait there till I'm through." He reached for a heavy steel spanner which some careless workman had left near the keyboard. "They can hang me if they like, but I'll smash your skull like an egg with this if you interfere."

As De Soto's last will and testament filtered into space, the whole purpose of his insane life became brutally evident and coldly clear. According to his own account he had fully intended helping the race a hundred million years in its struggle toward perfection, when he first realized his own incomparable powers. Then, as the strange decay which was ultimately to undo him began to steal through his cells, he foresaw the futility of any help; for in the end the whole race must perish or be mutated into another, not human. Why strive for its perfection? What are a billion years in the life of the universe, where galaxies measure their moments by the pulse beats that are the birth and the lingering extinction of a noble race, like that of the kingly reptiles? On such a scale the chronology of the mammals, and their puny human offshoot, are less than the tenth of a second. The reptiles vanished, leaving only the comparatively indestructible accidents of their bony frames in the hardened sands; the mammals must follow their predecessors into oblivion; the very stars of heaven crumble to dust or dissipate in futile heat, and the records of all life's struggle must in the end be smoothed out in eternal cold. Why strive? To what end? Only an idiot would say "for the greater glory of the human mind." The reptile mind forgot its glory before the first mammal gave milk to its feeble young.

PESSIMISM, black, irrefutable, and absolute, seems to have been De Soto's creed at this transient stage of his own evolution. The next stage—induced, as he declared, by a blunder on his own part, which initiated the degeneration of his clear seeing mind—began when an accident in his laboratory started his descent. At first his purpose was clear and rational. A race that must perish, or at best lose its individuality beyond all hope of past memory, was not worth any rational being's efforts toward perfection. The longer it struggled to attain the unattainable, the longer would be its agony of frustration. Therefore, in mercy, it should be destroyed. This was De Soto's first purpose before he degenerated.

He was not brutal; destruction should come in thirty years, swiftly, painlessly, mercifully, like the dawn. How? By universal sterilization of the human race. The physical means were simple; he had grasped them in the first hour of his study after leaving the library. Not X-rays, but shorter radiations, capable of affecting the most intimately complex cells of the human body, could easily be broadcast over the entire earth in a short morning. He would save humanity from itself by wiping it out, painlessly, in an hour. Scientists would speculate for thirty years on the cause of the universal sterility. Their speculations would end in death, complete, quiet and peaceful for the whole human race; and no last handful of sages, hundreds of millions years hence, would be condemned to see their dwindling star die and their leprous planet freeze. Sterilization, complete and universal for the race of men—that was the one sane answer to the riddle of the ages. When he joined the Erickson Foundation, this great dream was De Soto's purpose.

To accomplish it, he declared in his will, he needed

technical assistance—broadcasting stations over the whole world. These he could not command without financial aid. Seeking that assistance, he met with his first doubt and his first check. Was he wrong after all? Is there something in mankind of a different order from anything that the splendid, perfect, all-conquering reptiles possessed? There was. Man, he learned to his astonishment, had a soul. Who knows, he sneered in his last will and testament, but that the carnivorous reptiles, who had two more or less centered nervous systems, had not a pair of souls? The human soul, De Soto declared in his will, shows itself in art.

To his perfectly adjusted nervous system, all human art appeared as a blundering attempt to harmonize what cannot be harmonized, and to seek proportion where none is possible. A certain restaurant inspired him to these reflections, and later, a cook and waiter induced him to apply similar principles to the human body and to its concomitant, the human mind. The soul of man, if it exists, is, he concluded, an abortion that should be chloroformed at birth. The reptiles, he asserted, had a better substitute.

De Soto was scientific. Although he scoffed at the existence of a human soul, he decided to experiment before declaring that it did not exist. Should such a thing be found, he would throw his unbounded talent

With steady hand the captain aimed for the reptile's rudimentary upper brain and pulled the trigger.

aside and aid the race to develop this mysterious spark into a flame that would consume the universe. His will here becomes somewhat incoherent. In substance he seems to be saying that he offered mankind the stars and it asked for a better radio. Some who heard Crane's broadcasting of the original, interpret the obscure passage as meaning that De Soto offered all men everlasting oblivion, and they demanded eternal life. Whatever may be the correct interpretation, the objective facts are plain. De Soto was disgusted. In a last desperate battle he tried to educate a handful up to a taste for black pearls. His attempt failed, and he set out to make his friends kings and rulers of the world.

About this time, he asserts, he wavered. Might it not be possible, after all, to breed a race that would see nature eye to eye? How decide? Experiment answers all. He experimented, blundered, proved himself to be a human fool like all his kind, fell in love with his wife, tried to undo his blunder, failed, and, like the fool he admitted he was, doomed the whole race to follow in his own footsteps. He had hoped to show to all mankind, in his own son, an example of the transcendent genius that human nature, aided by human skill, may produce.

While experimenting he blundered—humanly, irrevocably. He grew to love his wife and longed for her death. Like the degenerated wretch he was, he could not kill her. He had failed. Was there still hope for the race? On a last appeal to the men whom he had made rich, he tried to make them see as he saw. The Universal, broadcasting its only half-understood wireless transmission of power, would avenge his own misfortune.

He knew that no living physicist or engineer could penetrate the subtle complexity of his mechanism. The best of them would see in it only a marvelously ingenious device for transmitting electrical energy without wires and without costly power stations. None would analyze the inevitable consequences of the profitable transmission, for none had the inventor's all but superhuman genius. They could not calculate, as he did, from the subtle equations, the accompanying radiations that would spray the chromosomes of every human being with hard radiation. Before the keenest living physicist or biologist could suspect the danger, the damage would be done, and the whole race, profoundly changed in its most intimate germ cells, would be irrevocably reversed toward its reptilian ancestors. Like an explosion, the whole course of human, mammalian and later reptilian evolution would be undone in a single generation.

De Soto was not without mercy. Feeling that many might have at least the beginnings of a soul in their minds, he provided for them. An entire generation must bring forth only reptiles. This he had already ordained, in putting into Williams' hands the dangerous key to a financial fool's paradise. The wireless transmission of *electrical* energy, and with it the instantaneous pulse of *dysgenic* energy, degrading the unborn offspring of all then living to the outward shape and the inner bi-souled status of prehistoric reptiles, was a certainty. Williams and his crowd, human as fish, had swallowed hook, bait and sinker. They, not De Soto, should have the honor of hurling humanity backward hundreds of millions of years in one generation. So much for justice; mercy must be heard. De Soto's mercy was this, and it was adequate.

ACCORDING to his last will, he baited Williams with the wireless transmission of *electrical* energy, and this is a fact. The counterblast with which he planned to destroy Williams was not electrical. At one stride De Soto put electrical energy forever on the shelf. It became as obsolete as the fly-coach—or it would have so become, had not Crane threatened the president with that hefty steel spanner. Atomic energy was the bait dangled by De Soto before the trustees' bulging eyes. At will he could pass up or down the atomic scale, transmitting any element into any other, as a skilled harmonist modulates his compositions, and in the passage from one element to its neighbors he released and controlled hells of energy that made the lightnings of heaven or the millions of volts dispensed by Universal as obsolete as the thin, steam whistle of a peanut stand. Many had released atomic energy; none had controlled it. De Soto did both, and he gave the great secret into the hands of the Erickson trustees as a free gift. They grasped it greedily. The moment Universal began marketing, the Erickson was to broadcast the full account of its own wireless "power"—controlled atomic energy—which would forever banish electricity and all its devices, as steam and gasoline had banished the plodding horse.

Included in that hard scale of cosmic rays, with which De Soto tempted and won the Erickson trustees, was another, a high harmonic of the first, tuned to disintegrate the procreative germ cells of all living things—plant, protozoon, animal, man. Thus would he show mercy. Universal's product would be on the air before the Erickson replied. For one generation the females of the human race would bring forth their reptilian young alive. Then, forever, the pulse of cosmic rays, generated from the disintegration of matter—universal matter, the stuff of which galaxies are made—disintegrated to swell the bellies of half a dozen human beings, would sterilize human and reptile alike. "Curtain," De Soto adds in his manuscript, "Humanity; Reptiles; Sterilization. The Great Comedy: Reptiles, Humanity, Extinction."

The last phrases of De Soto's great message to humanity flickered into space. The story of his own redemption by love, as his superb intellect rotted, is now a classic. Those who know it by heart may wonder why Alice was not redeemed by love, as De Soto was.

De Soto was not redeemed. He died as he lived. The letter which Crane broadcast was his last, futile gesture of triumph. The world was his, he said; the letter would lead the world through the hell it deserved for at least thirty years.

"You can broadcast this," the letter concluded, "as soon as you receive it, for then the Universal will have generated its reptiles in the bodies of your young women and in the cells of your young men. Nothing can ever again start evolution forward. We are reptiles, and as reptiles we shall live, propagate, and die, unless you accept my mercy. The Foundation which has taught me all that I know of humanity as it now is, may save at least the gray hairs of those now living from utter disgrace. Lest those whom I have served see their grandchildren—not merely their children—snapping at their prey, with reptilian bodies, I prescribe and offer you the solace of extinction. This, as I saw clearly at first, is the one hope of the human race. Use my device for the generation and transmission of atomic energy, and within a century the human race will have perished. For your offspring now will be reptiles; thereafter you and they will be sterilized—if you use my device. It will give you world supremacy in finance for as long as the human race endures.

"I mail you this when it is too late to avert the disaster which Universal will precipitate tomorrow. May the whole race taste the bitterness which I have drained. Once I had a vision, I blundered, I loved. I blundered

(*Continued on page* 520)

... was a thud, and a burst of flame came from a temple across the court ... head of the sacr... brighter glow, and then melted, with spurting sparks and a spattering of m...

The Demons *of* Rhadi-Mu

By Miles J. Breuer, M.D.
Author of "The Captured Cross-Section," "Rays & Men," etc.

NOT so long ago, as we count time, a highly unusual occurrence, not generally understood by the lay mind, or perhaps difficult of conception by even highly trained minds, would often be considered black magic. It is, therefore, not far-fetched to assume that the savage, brought to present-day civilization, should prostrate himself at the feet of the white man, who can repeat some of the achievements of the present century, and worship him as a god. Even we who are accustomed to the present-day wonders must look with awe and wonder at some of the seeming "miracles" created by man, or creations now in the making.

Illustrations by MOREY

The Lost Colony of Mu

"ANOTHER new region never before seen by the eye of man," remarked Major Morley to his mechanic, who was putting on the finishing touches, getting the gleaming plane ready for its flight. The Major appeared a trim, athletic man in his tight-fitting leather things, who did not show his thirty-five years. Nor did he feel them. He still had the romantic outlook of the twenties.

"Yes, sir!" replied Private Heyliger, never glancing off the wrench that he held on a strut bolt.

"There must be dozens of them about the country," the Major continued. "Airplane exploration is showing them up. Remember the vast plateau in Western Colorado, and the valley in Montana, whose existence had never been suspected until we surveyed them for the Department?"

"Yes, sir!" replied Private Heyliger. "Ready in about ten minutes, now, sir!"

Major Morley walked briskly a score of paces away from the plane and back again. Hundreds of trips he had made for the U. S. Geodetic Survey, and never before had he been as excited as he was now. His heart thumped and his face felt hot and cold by turns. For, this was a moment toward which he had been looking, and for which he had been working for nearly ten years. It all raced through his mind as he paced rapidly back and forth, waiting for the mechanic to finish and the photographer to arrive. Was it Professor Geiger's theory that excited him most or the thought of Miss Lyla, the Professor's daughter? Both were sufficient causes.

Ten years ago he had been a student-roomer at the Professor's home, and had learned of the Professor's researches, and had been charmed by Lyla's flashing eyes and vivacious ways. Right along here it was, just a few hours' flight in the direction that the plane's nose was headed, that Professor Geiger claimed he had found traces of a civilization as high as that of Greece and Rome and far ahead of that of Egypt or India, and dead and gone before any of these were dreamed of certainly it was possible. There were thousands of square miles of unknown, unmapped land all along the Colorado River. The Professor had a strange theory, which he substantiated by comparing his rock inscriptions and bronze images with those from India and Ceylon and Sumatra, that this civilization here in Nevada originally came from Mu, the lost continent of the Pacific, which also produced the present Oriental civilizations. The emigrants from Mu crossed the Pacific and sailed up the Colorado River, and built cities which were populous and civilized to a high degree, twenty thousand years ago, when our Occidental ancestors were hairy cave-men fighting mastodons with stone axes.

But all of this had cost Professor Geiger his life, and that of his daughter. He had made so many trips out here to study the country and bring back specimens for his museum that he began to think lightly of the dangers. On his last trip, he had taken Miss Lyla with him, and neither one had ever been heard from again. Never a trace of him had been found, which was no surprise, for in this maze of huge canyons and plateaus, armies and cities could be hidden unsuspected.

Major Morley had sworn to devote his life to finding them. Whether it was the fabulous and romantic country of which the professor spoke, that he wanted to see for himself, or whether he hoped that there was still a chance of his seeing Miss Lyla alive, with her

sparkling eyes and blue-black hair and flashing teeth, just as he had seen her helping her father in his museum, I do not know. Away back in the Professor's family there was Indian blood, and Miss Lyla's soft plump cheeks had the faintest suggestion of brown in them. But Professor Geiger was the most accomplished and cultured scholar the Major had ever seen, and Miss Lyla was following in his footsteps. And how she could sing!

Anyway, it had taken him some years to get started on the right course; to decide that airplane surveying was his only hope; to get into the Army, and then to be assigned to the Geodetic Survey, and finally to be assigned to map the Colorado River. It had taken cleverness and wire-pulling. It was a long, weary ten years upon which he looked back, and he sighed.

The mechanic stood up and saluted.

"All ready, sir! Shall I call for Sergeant Yoder."

The Major nodded, and Private Heyliger blew a whistle. In a moment the photographer appeared in a motorcycle side-car from the barracks gate. In another car was the Colonel, who shook hands with the Major and wished him success. In another moment the three were in their seats in the plane, which sailed up off the field, leaving behind the two motorcycles as little specks on the yellow sand.

It took only a few minutes to get away from the flat sand and soar up over the mountains. For a little while the wild and terrible beauty of that gigantically ragged country occupied them. Then—because modern planes cover a hundred miles in an incredibly short space of time,—Sergeant Yoder got his cameras pointed and his clocks and plate magazines all set, while Major Morley, with an accurate eye on compasses and gauges, became a busy man. It takes team work to get a good aeroplane map. Private Heyliger was also busy recording observations of height, speed, and meteorological conditions.

The biggest part of a day can pass very rapidly under such conditions. Suddenly they found they had covered the allotted task, were terrifically hungry, and felt quite dull and stupid from fatigue. The gasoline gauge indicated that it was about time to turn back, when suddenly, behind a great, jagged blue ridge, they caught a flash of green. It seemed to be a bright, flat, green space on the other side of the distant mountains. So unusual was such a sight in this region of bare, reddish rock and purple mists, that without a word, without even conscious thought, they headed the plane in that direction. Alarm over a failing gasoline supply forced them to turn back to the post, but not until they had glimpsed a great level plateau of the richest green, through which a river wound peacefully, fed by streams from the surrounding peaks. It was a brilliant sight, that bright green among the blue peaks, on top of one of which a storm raged among black clouds and streaks of thin lightning; it was a staggering thought, for who had dreamed of such a region in this wild country. "A discovery!" was the joyous thought of each of the three men.

THEY reached the post in silence; and they could hardly sleep that night. It had seemed like a glimpse into some romantic fairyland, and without a spoken word among them, the determination was mutual: the next morning by daylight the plane was ready. They pointed it straight as an arrow for the green plateau.

In a couple of hours they were over it. The glamour of yesterday's sunset was gone, and the region looked a little more prosaic; but it was still interesting. Of course, thought the trio to themselves, they had seen many places which from above looked interesting, and which on close acquaintance turned out to be nothing, from the standpoint of adventure. Only in Major Morley's head, there always dwelt the hope that here were possibilities of finding traces of Miss Lyla, or even of finding Miss Lyla herself.

The place was certainly inaccessible by ground travel. It must have been a mile above sea-level, and precipitous cliffs surrounded it on all sides. To ground explorers, the region must have looked like a huge, unscalable mass of mountain peaks. Only from the air could they see the green, flat stretches, the winding river, the pretty lake, the dark forests.

They circled about above the fascinating land. Little things moved about here and there; animals or people, they could not tell. There were groups and patches that might have been villages. In the gloomy, towering cliffs at the north were caves, and masses that might have been buildings. Sergeant Yoder was busily clicking his camera. He must have had several hundred pictures before the Major said into his mouthpiece: "It's about time to land."

A green, level place, like a field, near the river, offered an ideal landing place for the plane. It came down low at a place where the forest came down to meet the river, and low, rolling hills stretched away beyond. The pilot flattened out a score of feet above the ground. It looked like prairie. The wheels went bumpety-bump, and they were considerably shaken up, for the ground was somewhat corrugated. But, they made a safe and successful landing.

It was a real long-grass prairie. In the distance a herd of small horses was galloping away in fright from the plane. Before them was the river, big enough to float steamboats; to their left the dark, rich forest. In all other directions the green plains stretched away to the dim blueness of the mountains.

"Now what?" asked the Sergeant.

"We don't want to get far from the plane," the Major replied. "But we can take a look at the river and at the woods. Then we can go up again and circle about at a low elevation, and look the whole place over."

The river looked deep; the water was swift and reddish. The trees of the forest were not coniferous, as were most of the woods in this part of America. There were trees that they were sure must have been oaks and birches, and some thin-leaved ones that none of them had ever seen before.

"What in the world shall we report about this?" the Major observed. "No one will believe us."

They turned around to get back to the car, and were stunned to see a mass of brown-skinned men, all naked except for bright red or blue loin-cloths, creeping on all fours and on stomachs, toward the plane, evidently in considerable fear. The three explorers started and grew rigid. There was not a weapon between them. Such a need had never occurred to them. Involuntarily they all took a few steps toward the plane.

There came a yell behind them, and out of the woods poured another horde of brown figures. They were naked, with bright loin-cloths, and their skins were painted from faces to legs in bright and hideous designs, that made them look more terrible than ever. They carried spears, bows and arrows.

Major Morley was a scientist by nature and training. In that moment of danger, his first thought about those yelling savages charging with leveled spears down upon him was a wonder as to their ethnological classification.

"They are not exactly like Hindus, and not exactly like Hawaiians. Yet they resemble both," he said to himself.

They all braced themselves for the impact, determined to put up the best fight they could with bare

hands. The savages ran up to within a few feet, and then suddenly fell flat on the ground on their faces, prostrating themselves before the white men. Then, as though having performed a necessary duty, they leaped up, gathered about the three soldiers, and held them, by arms, legs, and clothes, wherever there was a handhold. By no gentle nor uncertain means, the savages directed their captives to march. They headed toward the forest, and bundled the white men along most roughly and unceremoniously, not hesitating to give a kick or a prod with a spear when the notion seized them. Those around the plane deserted it, and ran along with the group about the captives.

There seemed to be about fifty of the savages, and they surrounded them so effectively that there was not the least hope of a dash for liberty. They seemed to be fairly well organized, with implicit obedience to leaders, who seemed to have clear ideas; there was even a rough semblance of military formation in their progress. For what seemed an eternity to the three men from the airplane, they were shoved and hustled along at a fatiguing pace; hunger and thirst began to assail them.

The Major was puzzled at the attitude of the savages. They seemed to show the utmost respect and awe for their captives; but they seemed to be so rough by nature, so thoughtless and lacking in appreciation of someone else's point of view, that they were like the child that crushes the kitten it loves the most. Finally, the Major was ready to try and ask for rest and water, when the cavalcade came to a stream and stopped. They all sat down; the savages in a semicircle, with their captives in the focus of it.

"They look at us as though we might be gods," the Major said.

"They're certainly rough on gods," said Heyliger.

Food was passed around, some rough, hard, dark cake, and some dried meat. Both were unpleasant, and the three white men only nibbled at them a little. Then the savages bowed in the squatting posture, and started a queer chant, doing a kow-tow every so many measures. They seemed to be singing to their white gods.

Suddenly the Major heard a sharp crack behind him, and turning quickly, beheld a strange beast swishing through the leaves. A great bulk of an animal was approaching swiftly. It charged through the leaves, directly toward him, so rapidly that he had no chance to move out of the way and was too paralyzed to cry out.

It was very much like an elephant; somewhat smaller. The tusks were short, and bent backward instead of forward; the ears were small, and the trunk ridiculously short.

"A prehistoric elephant!" flashed through Major Morley's mind. "It belongs in a museum!"

Things happened quickly. There was an ugly snort and two more big leaps of the animal, right toward Major Morley. But at the same time there was a wild chorus of shouts and a trampling among the savages. Major Morley gave himself up for lost, and shut his eyes as the brute came for him, with trunk uplifted and tusks pointing.

The Priests Demand Magic

HE felt himself banged into from one side and thrown several feet. His feet and ankles were seized by a dozen hands, and he was dragged along the ground. Then he lay still, and somewhere at a distance there was an awful commotion: stamping and snorting and yelling. Bruised and torn and scratched, he sat up, and found Yoder and Heyliger sitting up and staring about them with amazement, not three feet from him. Around them was a ring of ten spearmen. Thirty or forty yards away, a terrific fight was going on. A tangle of brown bodies was swaying and struggling, while above and through them showed the plunging bulk of the elephant. They looked just in time to see one struggling, kicking savage raised up in the air, a gout of blood splash from his body and spurt in all directions, with the point of a tusk showing through his back. With a vicious toss of the elephant's head, the twitching body rose high in the air, its limbs kicking and blood spattering, and fell with a thud on the ground, where after a few jerks it lay still.

Spears stabbed in and out of the mêlée. A brown savage crawled out of it on his hands and knees, dragged himself a few feet, and fell flat. But numbers and spears soon told. The movements of the bulky beast grew spasmodic and its plunges less powerful. Finally it tottered, leaned over, and fell, the natives hurriedly backing away in all directions. There was a crackle of breaking speer-shafts.

The crowd of bloody and panting savages ran toward the three explorers, shouting and jabbering in joy. They formed into regular lines and broke into a chant. Four of the number lay writhing and groaning about the scene of the fight, and two others were quite still.

"Look here!" said Heyliger. "They've put up this scrap for *us*. To save *us* from that critter."

"So it seems," said Sergeant Yoder drily, "after nearly breaking our necks on the march. I'll confess that the charm of the native's disposition is beyond me."

"We ought to look after those wounded beggars," the Major said.

They rose and started toward the wounded men. Spears were held in front of them, to block their way. Finally by signs and earnest contortions of faces, they made the savages understand that they wanted to see the wounded men. One of them had his face and neck smashed beyond recognition, and his chest was heaving deeply in his efforts to breath through blood-filled bronchi. There was no hope for him, and the Major shook his head. Before he could raise a hand to interfere, one of the natives plunged a spear through the victim's chest and finished him.

Another man had apparently had merely a solar plexus blow; he was gasping and rolling his eyes, and shortly began to vomit. He would soon be all right. Of the other two, one had a broken thigh-bone, and another a badly lacerated shoulder.

"We've got to take care of them somehow," the Major said.

"We're there!" said Heyliger, stripping off his undershirt. He tore it up into bandages, and with handkerchiefs for pads they made a fairly neat dressing for the lacerated shoulder. With the broken spear-shafts from under the elephant, from which the blood was wiped with leaves, they made splints for the thigh. The bone was apparently in fairly good position, and with six sticks and a lot of bandage, they immobilized it quite satisfactorily. The natives watched them in open-mouthed wonder, occasionally breaking out into lively jabbering. Then the Major, by gentleness and firmness —such is the force of character and leadership—succeeded in getting possession of four spears, by means of which they made litters with their shirts and blouses, stringing the sleeves on the spear shafts. Major Morley and Sergeant York lifted up the man with the fracture. Heyliger, after a lot of tugging and swearing, persuaded a native who had lost his spear and his bow, to help him carry the other man.

"Bunch o' low down skunks," Heyliger was saying. "They would 'a' just left 'em here to die."

In the meanwhile, a dozen natives had cut strips of meat off the carcass, stuck them on their spears, and were now carrying them over their shoulders, with the blood running down the shafts upon their hands. The cavalcade started off, the three white men carrying their burdens.

By the time an hour was up, the white men heartily wished that they were callous savages, rid of all the merciful impulses that prevented them from leaving the wounded men behind. Hands and shoulders ached, and lungs panted desperately for breath. The unburdened savages hurried through the woods, and prodded their prisoners with spears into equal speed; nor did any signs of fatigue arouse enough sympathy in them to elicit offers of help in carrying the litters. But, at the end of an hour, the journey was over.

There was a corner with high cliffs on two sides, and the huge river disappearing into a narrow cleft. A most wonderful and vast temple stood in front of them, closely against the cliff wall; in fact part of it was carved from the rock of the cliff. It had the appearance of ancient Hindu work, with perhaps less of elaborate carving, but a most beautiful and artistic massing of square stories and square towers. At the foot of it, few and scattered and vast, was the village or city of the native savages out of which ran a crowd of brown, naked bodies to greet the returning band of warriors. It consisted largely of women, children, and old men. As he drew nearer, Morley perceived that the village was composed of thousands of square clay houses, arranged in blocks and rows; and especially piled on top of each other, sometimes in stacks of four or five houses high.

"Gosh!" exclaimed Heyliger. "They live here just like they do in New York."

Shouts were exchanged between the two approaching groups. The villagers perceived the blood and wounds, and many of the women detached themselves, and ran still more swiftly, and searched intently among the warriors. One of them put her head down to that of the man the Major was helping to carry and then seized the spear shafts out of the Major's hands and insisted on helping to carry the litter. They arrived at the foot of a ladder leading up to a house raised two stories above the street; there was a bilingual argument carried on chiefly by means of hands and shrugs, and the woman yielded. She ran into the ground floor, and soon emerged, apparently with permission to house her wounded man without carrying him up the ladder.

BY that time a well-informed squad of spearmen took the three white men in charge again, as the latter were retrieving their shirts and blouses from the litters. Up the great, broad staircase that led into the huge temple, along a vast corridor as wide as a street with its ceiling hidden in gloom, past great images set at regular intervals, they were led into a vast hall, that looked like a cathedral. There was something church-like about it, with altars at one end, and earthenware lamps swinging on chains, and long-whiskered, white-robed priests solemnly busy at something. There were no seats nor benches, however, but skins were scattered about the wide expanse of floor, many of them stuffed out into cushions. The half-gloom only enhanced the beauty and grandeur of the place.

Right through the middle of the great room the party proceeded, toward the group of priests. The latter straightened out and one of them stepped out in front. The savages prostrated themselves once, and then their leader opened a harangue. He did most of the jabbering; the priest spoke only occasionally and softly, and finally ended the episode by raising and extending his arms over the group of warriors in some kind of blessing. The warriors departed solemnly, but apparently highly pleased. Major Morley and his companions were left with the priests.

The priest bowed and spoke. Major Morley bowed, but refrained from speaking.

"Good start," muttered Heyliger; "but how in heck we'll ask him our way home, I can't see."

The priest was making gestures, with his hands toward the explorers, then toward himself, and then smiling happily, as though to indicate that they were welcome. Then he motioned for them to follow him. He led them to three comfortable little stone rooms in a row, where there were basins of water and soft linen robes, and bowls of appetizing cooked rice and meat and vegetables. Here he bowed deprecatingly and withdrew.

"Seems like we stand in good with the bosses, anyway," Heyliger remarked.

"We'll have to take it practically," the Major said. "Let's wash up and eat and make ourselves at home. Then we'll try to learn the language, and find out exactly how we stand here."

The old priest allowed them an hour, and then came back. By this time they were feeling much better, after a clean-up, a meal and a rest. This time the priest led them merely across the corridor, and they found themselves in an astonishing chamber. It was long and narrow, the length being six or seven times that of the width. One end flared out into a wider portion; the other came to a point, and at this point a huge blue-and-yellow trunk of flame hissed and roared up out of the floor, and through a hole in the ceiling. About it were scattered various utensils suggesting the founder's and the blacksmith's art. In a moment Major Morley had concluded that it was a natural-gas flame, for it looked quite typically like a lighted Bunsen burner, except that it was magnified a thousand times. Evidently the priests were making good use of its heat.

There were tables along the walls of the room, upon which were scattered all manner of strange utensils, the use of which they did not at first surmise. Priests were superintending the carrying in of more tables and baskets of more utensils and various supplies, the actual labor being done by naked brown savages. It was immediately obvious that the priests were intelligent and civilized, and on a plane very much higher than that of the savages, who lived in the hut city about the foot of the huge temple. The priests were showing the tables and their contents to the travelers, speaking in soft tones.

"Their gestures and attitudes indicate that they are giving these things to us," the Major remarked, in considerable puzzlement.

"Much obliged," said Heyliger. "Could you manage, sir, to ask them to loan us a Ford?"

The Major was preoccupied with a strange thought.

"That language sounds somehow familiar to me," he mused. "It sounds as though I as least ought to know what it is. God knows I can't understand it. *Devas, devas,* the priest said several times. It suggests 'gods.' It can't be Latin. I could recognize that."

Then he caught sight of the hem of the priest's robe. There was an inscription there, the first word of which was a simple one of three letters, which Major Morley had often seen in Professor Geiger's museum;

three letters in Sanskrit, "P," "A," and "T," meaning "father." However, in Sanskrit, there are no circles around the letters. But the ancient inhabitants of Mu put circles around their letters to represent the sun.

"Sanskrit!" exclaimed the Major.

He caught the priest by the arm.

"*Ignih?*" he said breathlessly, pointing to the fire at the point of the room.

The old priest's face broke out into a joyous expression. He pointed up and down the room.

"*Banah! banah! dadhami!*" he said eagerly.

"Now what can that be?" the Major said to his companions. "*Banah* means arrow——"

"Why, sure!" broke in the Sergeant. "This whole room is shaped like an arrow!"

"And *dadhami* means to give. They are giving it to us."

"Go on. Go on, sir, and talk to him," Heyliger urged. "There ain't nothin' the Major can't do," he confided to the Sergeant.

"Too bad," the Major replied. "That's all the Sanskrit I know. Still, I've studied the stuff, and can learn quickly."

The old priest was also disappointed when he realized that the Major knew only a few words of his language. But learning began at once; pointing to objects and learning their names, and the Major found his memory supplying him with words here and there.

There began a life that lasted many weeks, learning the language, living in their three comfortable rooms, and spending days in the arrow-room. The priests treated them with the utmost respect and cordiality; and the three Americans were only too glad to admit that the priests were intelligent, civilized, cultured people. Krishti, their head or "father," became an especially intimate friend.

Their meals were brought in by white-robed priestesses, whose dark features were possessed of no inconsiderable beauty. Gradually, one tall woman considerably more beautiful than the rest, made it her especial duty to see that the Major's food was always perfect in preparation and arrangement; and while he ate she would in her melodious voice speak to him in simple sentences, very skillfully worded to give him practice in the use of the language.

They became thoroughly acquainted with the arrow-room. There were many vessels on the table of a siliceous material, probably glass; many utensils for heating, boiling, igniting, and firing materials; curious fluids in flasks and vases, and little heaps of various kinds of minerals. In fact, it was a primitive laboratory, and not so very primitive at that.

"We could do a great deal here, if we only knew how," the Major observed. "I regret immensely that I am not a laboratory man. It is evident that these people expect something of us here. They seem to take it for granted that we belong in a laboratory. What could that signify?"

"Something about Miss Lyla, no doubt," thought Heyliger, but he kept silent.

So, they kept on working at the language, and trying to learn all they could about the materials in the laboratory, and hoping for a chance to escape. One day, the tall priestess, Purtrani, told them in her liquid voice, that the tribes wanted to worship the *devas* in the temple.

"*Sacate,*" she said, meaning for them to follow her.

She led them into the original cathedral-like room, where hundreds of native savages were gathered; where they prostrated themselves to the white men at the altar and sang their wild chants. The priestess laid flowers around the white men's feet and burned incense before them. In the quiet monotony of the procedure, the Major got an idea.

"Look here," he said to the other two. "There's that gas flame. The air feeds into it through a round hole in the room below. We could plug that with a goatskin

Suddenly the Major heard a sharp crack behind him, and turning quickly, beheld a strange beast swishing through the leaves.

—stick it in below the level of the flame, and inflate it. Shut the gas off. Till the flame goes out!" He waited expectantly.

"Yeah, and then what, sir?" the other two asked.

"Then we'll have gas."

"Yes sir. Then we'll have gas?"

"There's a million bolts of silk around here, beautiful stuff. We only have to figure out a gas-tight varnish of some sort, and then, up there on the roof where the flame now comes out——"

"A balloon!" Heyliger exclaimed. "I knew it! I knew the Major would find a way of getting out of here!"

EAGERLY they set to work on the balloon plan. It took many weeks, even to make plans and accumulate raw material. They were frequently interrupted. Now the priests would take them into the Temple library, where hundreds of thousands of book-scrolls were stored, a vast and wonderful literature it must have been, a treasure for the archaeologist. Again they visited shops where priests and priestesses were at work, at wood and metal and stone, at weaving and spinning and painting. They worked gold and copper and iron; they made wonderful things of silk. They had speaking-tubes from one room to another, and even a reaction-turbine of clay, run by steam, whose whirling moved a fan in the hands of a stone image during

religious ceremonies. These people could never possibly have heard of Hero's turbine; they must have invented it for themselves.

Or, under heavy guard, Morley, Yoder, and Heyliger were conducted through the village, where thousands upon thousands of savages led their primitive, filthy lives in their piled-up stone hovels, fishing, hunting, tending sheep and cattle, primitive agriculture, and no end of fighting. On the other hand, the priests had skilfully tended fields, gardens, and orchards. Yet, the two races never mingled. They came in contact only in the cathedral chamber during religious ceremonies, or when the priests forced, by means of superstition, the natives to perform heavy labor needed in the Temple.

"Caste," the Major said, "in its rudimentary stage."

The three white men could never get past certain limits. Always when they approached certain passages, they found lowered spears in their way; and when they asked why, their questions were not even heard. So they worked at the balloon. They made a successful model, two feet in diameter, and had the satisfaction of seeing it float away to the east, where their airplane lay—somewhere. Eventually, it began to look hopeful that this great pile of varnished silk, and this square basket, would one day sail up out of the Temple and carry them in the same direction. Then, the sand flats between the Temple and the river began to fill with detachments of armed men, fiercely drilling. There was a fire in their activity that was suggestive.

"Looks like the cookin' up of a scrap," Heyliger observed.

One day the two wounded savages whose lives the white men had saved by proper medical attention, now healed and well, came in and offered themselves and their families as slaves. The Major was about to send them kindly away, when it occurred to him that their help would speed up the making of the balloon. He put them to work, and the poor savages were utterly happy to be of service.

By this time, all three of the men were fluent in the Sanskrit tongue, even to pronounce the queer "cerebral" sounds with the under part of the tongue against the roof of the mouth, and to using the beautiful "musical" accents that characterize this language. Then one day the time suddenly arrived when they needed this fluent knowledge. There was singing from the cathedral and shouts from the village, and the roar of drums from the troops on the sand. Krishti and two of his priests came to the rooms of the white men.

"The time has come to talk to you, and to explain why we need you," the priest began. "Long ages ago this land was settled by colonists, happy people who came across the sea from the Land of the Sun, called Mu——"

"The Lost Continent of the Pacific," the Major said to the other two.

"They sailed up the big River," the Priest continued, "and built big cities here. It was a prosperous land under the rule of a beneficent king, and his learned wise men. These wise men kept constantly inventing new and more wonderful miracles; and finally they found a mineral which caused a sudden and terrible fire. It scattered their city with a great shock, and kept on burning, and has been burning ever since, for as many centuries as there are days in a year. It does not look like a fire, but anyone who ventures near becomes terribly burned, and dies. This man was so burned, because he tried to cross the Zone of Fire——"

The priests motioned to two bearers who carried in a litter containing a man, who was covered with great, open, blistered and burned areas, and was obviously in terrible agony, and immediately carried him away.

"Radium burns!" pronounced the Major, in amazement. "Poor chap!"

"This burning spot," continued the priest, "which shines at night, is on the spot where the city of Ra-Mu stood, and divides our land into two almost equal areas. The people are mostly savage, except for the priests of this Temple, called Sirdah-Mu, and the one at the North, called Rhadi-Mu. The savages of the two halves of the land are bitter enemies, and fight constantly. They have nothing to live for but to fight each other, and we cannot prevent them; we would prefer not to fight, but we cannot change the instincts of the savage multitudes; and we need their labor and their support in our work and our worship.

"The constant fighting of the two tribes has kept their numbers weakened down, and through long ages, they were fairly well matched. In late years, our tribe, the Sirdah-Mu has been getting the worst of things. That is all because about ten years ago a white divine man from far lands came to the tribe of the Rhadi-Mu and lent them much powerful magic with which to kill our people. His magic has enabled them to weaken our tribe, and we are afraid they may destroy us altogether. That is why we are so happy to find three white gods who will give us magic against that of our enemies. We have given you a labor-room with all the utensils and substances to work with to produce magic. We want you to make us some miracles, as does the white god of Rhadi-Mu.

"Today we have word that an army of warriors from Rhadi-Mu is marching on us. We implore you to get your magic ready to help us, or they will destroy us all."

The Demons of Rhadi-Mu

"WHAT'S it all about?" said Heyliger.

"I would guess that some white man lives with the priests of the other race, and that he must have devised some scientific weapons for them," the Major explained. "I shouldn't wonder if it were Professor Geiger. This stuff all corresponds to his reports from his previous trips."

"And," added Sergeant Yoder, "they expect us to make some rifles and artillery in the next day or two."

"Don't you treat it as a joke, either," the Major said. "We've got to get in and help somehow, or we'll get a spear through our ribs, if not from one side, then from the other."

"But what can we do? This bird says the other army is on the way." Sergeant Yoder snorted in contempt at savage ways.

"I'd like to walk out of this, just like I do out of a picture-show that I don't like, but it don't work, does it?

"When does this Army hit here?" Heyliger's mouth twisted in grim humor.

"The priest said that the scouts reported that they were crossing the Zone of Fire through the Valley of Mirrors, the only way across. That would bring them here by noon, if they hurry. And, according to reports, they outnumber our boys sufficiently to wipe us up."

Sergeant Yoder jumped up. He was a photographer, and knew the most about practical chemistry in the group.

"There is sulphur and nitre in that laboratory. Charcoal we can get fairly quickly. We can easily make up a bunch of gunpowder."

"And then——" Heyliger gazed in quizzical expectation.

"We haven't time," said the Major, "to make even the simplest weapon. But we can set a mine."

The priest was happy to see them set to work with real enthusiasm. They found plenty of charcoal ready. It took a short time to grind the ingredients, wet, and

keep on grinding, so as to mix them intimately; with plenty of native labor to help. Then the wet mixture was laid out to dry in a warm, breezy place. It was next pulverized and in a few hours they had a dozen big vases full of gunpowder.

In the meanwhile, a narrow area between river and forest was selected, where the enemy troops must pass, and plans were laid to bait them with a small force, blow them up, and then to fall on whatever men remained with the available troops. The Major counted chiefly on the fact that the explosion would demoralize the ignorant savages. They dug their pit, laid their mine, covered the powder with rocks and earth, and laid a train for a fuse.

Then they waited. Scouts kept coming in and reporting that the enemy was approaching slowly. Then that the enemy had stopped. Again that the enemy was coming, but slowly. The Army grew impatient, and the little group of warriors that served as a decoy to the mine was nervous and scared. The Major persuaded the leaders to drill the men. After a while that failed, and the priests had a sacred image dragged out, an ugly god in a pointed hat. Three fires were built around it, and the companies took turns prostrating themselves about it and chanting. Then came the turn of the white men to serve as gods and be prostrated to and sung to.

"White lords, save us from the demons of our enemies," stuck in Major Morley's mind, in spite of the distraction of the beautiful priestess Purtrani kneeling in front of him, with his hand on her neck.

The priestess flung a handful of something into the fire, and a dense cloud of smoke rolled up about her and the Major, concealing them from the others as though they had been a hundred miles away. The priestess Purtrani sprang to her feet, seized the Major's hand and drew him after her. Not knowing just what he was doing, he followed, through smoke, in which dim, vague forms of men showed. In a few minutes, the smoke was gone, and they were alone in one of the square, stone houses of the village. The Major could not deny that the woman was beautiful, and that the light that shone in her eyes as she rolled impassioned torrents of Sanskirt at him was thrilling. In fact, for a moment, it was alarming. Again she was dragging him by the hand to an inner door.

"But, but——" stammered Major Morley, with Lyla in his mind, "the troops are waiting; there is going to be a battle."

"Who knows who returns from battle and who does not?" the priestess breathed, and he could feel the heat of her breath on his neck.

"But—my companions—" the Major protested again, very much embarrassed, not knowing what to do.

The priestess' face suddenly grew harsh.

"Ah! I know!" she snarled. "You love Sahab, the priestess of the fire. Urrgh! Faugh!" and she launched off into a torrent of Sanskrit that the Major could not follow. She stood erect and rigid and clenched her hands and raised them above her head. He slipped slowly out of the door. At first she did not notice him, and then seeing him in retreat, she flung curses after him, that sounded incongruous from her beautiful lips. He saw no more of her that day.

Late in the afternoon, the savages lost patience, and the column began to pull out to meet the enemy. The Major swore and protested that it was suicide, but the native leaders disregarded the white god's advice. They wanted divine action, not divine advice. The scouts said that the enemy was ten miles away.

A long column travels slowly. Darkness caught them rapidly, and camp was made by twilight with fires twinkling here and there.

"Good thing night caught us," the Major said. "We can move the mine, and set it between us and the enemy."

They ate, rested a little, and prepared to get to work.

Suddenly, frightened scouts, gray in their pallor, came panting in that the enemy were attacking. At the same time, a most unearthly noise began. It rose in a terrific shriek, died low, and swelled again in a wail, ululated up and down to a crescendo and sank down sickeningly to a moan; over and over it repeated these variations, but never twice the same. The warriors trembled in every limb; even the intelligent, fairly well civilized priests looked pale and hesitated.

THERE was shouting ahead; commanders were attempting to form their men for combat; and from the distance came the beat of running feet in the intervals of that horrid wailing. Then, in a burst of brilliance, a huge dragon appeared ahead, with points of green scintillating in a million places all over him. He disappeared suddenly again in a blaze of yellow and a terrific hollow roar, that reverberated and bellowed, and seemed to shake the ground. The warriors dropped with their faces to the ground and trembled.

Then in the distance the Major could see a long row of bursts and jets of flame; a fence, a stockade of blazing flame, advancing slowly upon them, coming slowly, relentlessly toward them. Terror spread through the camp, and the warriors were helpless and useless with panic.

Heyliger laughed long and heartily.

"Is your mind affected, too?" the Major demanded sharply.

"Damned simple," Heyliger roared. "Can't you get it? I've made stuff like that myself. That roar is nothing but a powerful amplifier with the tubes oscillating at low frequency."

The Major nodded. It was plain now that he knew what it was; he could recognize the timbre and the oscillations of the tubes.

"And a few common fireworks," continued Heyliger. "And a fire-siren. Old stuff. No greasy savages nor no goat-whiskered priests ever got that stuff up. There must be white men, Americans there. Some hope—what?"

The Major did not voice his thoughts, but Lyla was their center, and Professor Geiger their background.

Suddenly, shooting began. The shots were distinct cracks, not exactly like a rifle; certainly not pistols. Instinctively the three Army men fell flat on their faces. There was no use in getting shot at random, with no objective in view.

"This bunch of savages is licked now," the Major said.

Indeed, all around there was yelling and trampling of feet; and bright lights flared and waned. Right beside them sounded a terrific bang! They all jumped, and the mechanic sat up, holding a red, stumpy, charred object.

"Ha! ha!" he laughed again. "Firecrackers!"

So they ventured to look about them again, trying to make some sense out of the confusion of running and struggling forms. A white figure advanced toward them, and behind it, a circle of flames closed around them. It was a woman with long, flowing hair, a priestess.

"There they are," said a familiar voice, "the three white magicians, who with their magic would destroy your warriors."

She stood there, pointing a rigid hand at the Major and his companions, and she laughed a shrill laugh of triumph.

"As the demons of Rhadi-Mu are eating you alive," she hissed at the Major, "think of Purtrani whom you scorned." The translation of her Sanskrit words sounds tame and circumlocutory; the way she said it was indescribably hateful and vicious.

A circle of spearmen closed about the three men, and the priestess moved off and vanished. The men raised their spears and reached out to seize their captives. Heyliger swung back and hit one of the savages on the point of the chin with his fist, toppling the man over backwards. For a moment, the prostrate man's companions regarded him in amazement; then they raised their spears clubwise. The Major felt a crack on the back of his head and everything went blank.

Afterwards he was conscious of much nauseating movement, and an ache in his head. Gradually, it seemed, he drifted back to consciousness. The mechanic and the photographer lay beside him; the latter moved and groaned. It was dark and flares were going. There were running feet and vague, confused noises. He dozed and wakened and dozed again. Finally, bright sunlight on his face awakened him. He felt fine. The other two were stretching their limbs beside him, looking the same.

Evidently they were far from the place where they had been last night. Now, a dense forest was about them, and little spears of bright sunlight came down from above. The natives all around them looked exactly the same as the natives they had been used to during the past weeks, the same weapons, the same loincloths; even the priests looked the same, though there was no one whom they recognized personally. Their jabbering was in Sanskrit, but sounded just a little different; it must have been a slightly different dialect.

"Where are we? How'd we get here?" Heyliger asked.

"I guess it makes little difference *where*," the Major said. "But there are the crude stretchers that have made my bones ache."

The savages, perceiving that they were conscious, descended upon them, and after mauling them about most roughly, tied their hands and feet. They placed before them a coarse gruel, which the white men were compelled to eat with their hands tied, under the gloatingly complacent regard of the savages. There were other captives, all warriors and no priests—tied, subdued, scared, speechless, and looking as though they had given up all hope.

"The general appearances are," Heyliger remarked, "that there is something hot in store for us."

"You're too damned cheerful for me," the photographer replied.

Each of the prisoners was tied by a braided leather rope to a burly savage from the other army and were started on the march with prods of spears. The wood was alive with warriors, who all suddenly began to press hurriedly in the same direction. A number of them in the distance were seen riding on the queer, prehistoric elephants. In an hour they had emerged on the long-grass prairie, and the march became more rapid still, a sort of trot. Many of the savages carried queer burdens—boxes, cases, cylinders, things with a civilized appearance about them.

It was a long day. Fatigue, hunger, thirst, seemed to arouse no consideration in their captors. Lagging ones received prods with spears. It was in the middle of the afternoon that they perceived ahead of them a sort of shimmering in the air, such as is seen over a heated surface. As they neared it, the Major perceived that it was a bleak, desolate area of bare, reddish soil and jagged rocks, without the least vestige of vegetable life. He could hear whispers of "Fire Zone" among the captured natives, though he saw no fire. It was merely a bare, raw stretch, reaching to the horizon. The Major remembered the burned flesh and red wounds of the man who had tried to cross this radioactive desert. How would they cross now?

A long, thin column wound gingerly toward it, and suddenly disappeared. The Major perceived that they had arrived among a pile of rocks with a dull, gray gleam, and gone in among them. When he reached it, he noted it as a sort of half-tunnel, partly open to the sky. The floor and walls, and whatever there was of ceiling, were formed of huge rhomboidal crystals of a dull gray, with here and there a flat, shining surface. He could see how the natives might have called this the "Passage of Mirrors" or whatever it was, though they did not look like mirrors to him.

"Won't we get burned?" he asked one of the natives.

The warrior was frightened, but assured him that they would not.

The Major scratched one of the huge prismatic crystals with a sharp rock, eyed suspiciously by the savages. It was soft, and his scratch left a shining mark.

"It's galena," he explained to his companions. "Lead sulphide. If the old priest's story is true, I should presume that this is the remains of some protective chamber, made of the lead mineral, in which the ancient scientists did their work with the radio-active stuff."

In three hours they were through the tunnel, a good deal of delay being due to the passage of so large a body of men through a narrow space. Numerous drums began to throb, and answering throbs came from the distance. Again, the white men were conscious of gloating looks of anticipation as the natives looked at them. One of them noticed Heyliger's blank look as the result of these gloating glances; and he laughed the mirthless laugh of a savage, made some grimaces toward the white men, and shook himself down in a heap on the ground and laughed again. His companions joined his hideous, terrifying laughter.

"Br-r-r-r!" said Heyliger. "Cheer up! They can hardly wait."

Toward evening they arrived almost at the foot of the northern mountains, and saw before them the towers and spires of a group of huge temples, and at their foot again the weltering mass of native huts. The temples looked even more beautiful than the one they had left. Gibbering crowds ran out of the city to meet the returning warriors. The latter displayed their captives proudly, and the people hopped up and down in glee.

They marched right through the city of squalid huts, which, like those of Sirdah-Mu, were built in the form of cubes and rectangles, and piled up three and four high, the upper ones reached by shaky ladders. Their way led to the temples, whose beauty the Major was compelled to comment upon again and again. They were similar to those seen in Java or Siam; and there was a great group of them around a central open space, like a court. This court was occupied by three huge images, not of Buddha, but not unlike him either, squatting, placid. One of them had its mouth open, a huge, gaping hole, six feet in diameter.

The prisoners were bundled roughly across the court and marched up the broad stairs of one of the temples. The three white men were shoved into a small room, and the stone door swung to upon them. There was one window, two feet square, which looked out upon the courtyard of the idols. This court was now densely packed with yelling savages; drums were pounding hollowly, and cymbals were clanging. Wild chants arose from time to time, in the intervals of which there were discorded shouts. Now and then, in a lull of these noises, they could detect a steady, hissing roar, as they watched intently out of the window.

As the darkness increased, they perceived that one of the huge images, the one with the open mouth, seemed to glow, with a vibrant radiation in the gathering darkness. Suddenly the crowd was hushed, and then broke out in a loud, savage cheer. An altar was rising slowly out of the ground in front of this idol. On the top of this altar was a man bound to a post, and to our horror we found that it was one of our servants, whose wounds we had attended after the fight with the elephant. The poor fellow, named Jishma, writhed and struggled. The altar stopped rising when the man was on a level with the idol's mouth, and three or four feet distant from it.

There was a grating clang; a lid slid aside, and the mouth of the image became suddenly a glowing circle, a fiery opening, out of which shot a stream of intensely white flame, enveloping the poor Jishma instantly. He gave one shriek, cut off in the middle, before he became a smoking, sizzling, shriveled, charred cinder. The crowd hopped up and down and yelled. The lid closed again, the mouth of the idol was dark, and the altar sank.

The white men watched, paralyzed. Again the altar rose, with another victim bound on it. At the last moment they turned their eyes away, just in time to see them leading another captive below their window. He had been the leader of one of the companies, and was a stately man. He fought with them like a wildcat, but they overcame and bound him.

Footsteps sounded outside their door.

"We're next!" said the inevitable Heyliger.

The Wish of Yishni

SUDDENLY all three of them were petrified into rigidity. Their attention was distracted from the tragedy outside. From somewhere had come a queer little feminine shriek. It was soft, and muffled and distant, and yet it seemed to be right in the room with them, unmixed with the external noises. They searched the room rapidly. There was no place from which it might have come. Then came words, masculine words, in the same muffled, distant way:

"Dear, dear," it sounded like some dear old petulant grandfather. "Those children are up to their mischievous pranks again."

Then followed the murmur of a feminine voice, in which words were not distinguishable. Again, a deep sigh from the man.

The three men looked closely about the room. It was of stone, with bare walls, and two solid stone benches. There were various odd openings in the rock, any of which may have conducted sound through a speaking-tunnel from a long distance. The walls were solid, and the voices of the prisoners in the next room came in through the window around the outside, but not through the stone wall. The mysterious voices were now silent.

Suddenly a terrific bellow resounded outdoors.

"Ra-wow! R-a-ow-ow!" It seemed to say at first. Then came *"Kessa! Kessa!"* in terribly stern, loud tones, that shook the very walls of the stone buildings. The words meant *"stop!"* in the mongrel Sanskrit used by these people. The crowd went suddenly paralyzed, and silent as shadows.

"The God Yishni commands you to stop at once!" the voice bellowed. *"Yishni has told you three times before that these sacrifices were displeasing to him. One more sign to show you that the God Yishni is in earnest!"*

There was a thud and a burst of flame came from a temple across the court. The head of the sacrificial idol burst into a brighter glow, and then melted, with spurting sparks and a spattering of molten metal. It slumped into a shapeless mass half way below the shoulders, with flames shooting out from the fire within its hollow interior. The multitude slunk away in silence. The bellowing went on:

"The next time the God Yishni has to speak to disobedient followers, he will do worse things. Dratted little nuisances!" The latter part came in a lower tone, *sotto voce,* and in English, not in Sanskrit. The three men gripped each other.

"Dandy power amplifier!" the mechanic chuckled. "There's a good mechanic here somewhere. But how'd he melt old Bozo's head?"

"It must, it *must* be Professor Geiger—" the Major mused.

The voice outdoors continued to blare in awful tones: *"Take the prisoners and put them to labor in the new chamber of magic in Yishni's temple!"*

That was all. A silence followed that was like a blanket.

The next day they were put to work, shoveling some sort of rock, in well-made iron scoops. Other prisoners were breaking and crushing the rock and wheeling it away in workmanlike wheel-barrows. But nowhere a white man. They had a tyrannical foreman who would not let them talk, and lashed at them with a thong if they tried to ask questions. Dumbly, they bent their backs to work, and tried to think. How to get word to this white man who was behind these supernatural manifestations. They lived in the same square stone room, on repulsive food, among countless vermin, and with no relief from the ubiquitous dirt. The only people they came in contact with were filthy, ignorant savages, who worked when they were forced to, and fought whenever they got a chance. Only one or two glimpses, at a great distance, did they get of clean, white-robed, intelligent priests.

All their efforts to get word to the priests were in vain. Their overseer laughed coarsely.

"If you have magic, use it to get to the priests," he said, and laughed till he doubled up over the joke. "If your magic isn't strong enough, stay here and work."

They spent night after night in gloomy dejection, trying to think of some plan to get in communication.

"It must be Professor Geiger," the Major kept repeating. "Who else could it be?"

"I would swear to his voice," he said again. "And—to *her* voice!"

"Dirty heathen!" said Heyliger, apropos of his own particular thoughts. "I knocked one down yesterday, neater'n a whistle, and he took it as a compliment. Oh, damn! What'd we ever start over here for?"

That midnight the Major leaped out of his sleep with a shout.

"Yell!" he cried. "Shout! We heard them. Why couldn't they hear us?" Then he sank down, with his head in his hands and groaned:

"The human mind is indeed a rudimentary institution! To think that it took us all of this time to think of such a simple thing."

Heyliger was already making a hullabaloo.

"Help!" he yelled. "Professor Geiger! White People! Get us out of here!"

But all the reply they got was the mutterings and imprecations of the prisoners in the other rooms. They finally desisted from fatigue.

In the morning things looked clearer.

"Of course," said the Major, "the communication to this place must come from some one certain room. They are not in that room all the time. We'll have to keep up some shouting in English as much of the time as we can. Sooner or later we'll catch them at home. Tonight we'll start taking turns; one will shout, and the others will get what sleep they can."

Heyliger's turn came first, by lot, that evening, and

immediately a happy inspiration possessed him. He started in at once with the rollicking tune of *I've Been Working on the Railroad*, and carried it through his entire repertoire of popular and classical (?) music before his turn was out.

The plan looked reasonable, but its carrying out was discouraging and fatiguing. It could not be kept up consistently; it was not humanly possible. They missed many hours; but they kept up singing and oratory and recitations as much of the time as they could. They spent many more days in the dirty stone room and at hard labor shoveling rock. But, one evening there was some sort of ceremony out of doors in the court; there were priests in rich gowns, and crowds of people; and wreaths of flowers and baskets of fruit and vegetables were put about the feet of the idol with the melted head. Heyliger was mechanically doing his best with *"A Life on the Ocean Wave!"* in his penetrating voice.

There came the same little soft, feminine shriek. It seemed to come from nowhere.

"It's English!" said the voice.

There came some indistinguishable growling in a man's voice. It sounded ghostly. The man's voice seemed to come nearer, and demanded:

"Who are you?"

"Three U. S. Army explorers," the Major answered. "Are you Professor Geiger?"

"Good Heavens!" exclaimed the mysterious voice. "Lyla, somebody knows me. Where are you?" said the voice in a louder tone.

"In the temple south of the court."

"There are a thousand rooms in that temple. How can we find you?"

"Don't you know where your voice carried to?" the Major asked.

"Bless me, no," protested the gentle voice. "These temples and the ground under them are honeycombed with speaking tunnels. But I am across the court from you, in the largest temple. Have you any matches or can you make a light?"

"No. Could you see a white shirt if we waved it?"

"Good! I know how to find you now. Can you be patient? These savages are hard to handle. It will take time to get you out. In the meantime, cheer up and prepare for a welcome."

They had to work all the next day as usual. But that night, the bellowing voice said, reverberating through the empty court:

"Yishni wants three new priests. Yishni is displeased because his warriors have concealed priests among the prisoners at labor. Beware of Yishni. The light will find the priests."

The few people in the court stopped in their tracks, as a bright disk of light danced up and down the face of the temple, and finally stopped on the window of the stone room and stood motionless. Several savage spearmen came in and prostrated themselves before the three miserable white men, and then led them out and across the court.

The Master of the Miracles

UP the stairs of the huge temple they were led, past rigid guards with spears. Within they found beauty and luxury; skins on the floor, brilliantly colored tapestries on the wall. Through long corridors and past a maze of rooms they went, into an inner room, where they found a gray-bearded man in a silk robe, seated at a desk covered with papers. Beside him stood a beautiful woman in her early thirties.

"Professor——"

"Major Morley——"

There was joyous wringing of hands.

And Lyla held out her hand, speechless, with emotions that could not even show through the expression in her face. Major Morley went up to her. Neither could he say a word. He gripped her hand. She bent her head over it, and then turned away and brushed her eyes. The Major cleared his throat.

"Sergeant Yoder and Private Heyliger, Professor Geiger," he said.

"Come," said the Professor; "I've got a big dinner waiting."

During the meal, the Professor talked. The Major and Lyla were silent.

"We've been here ten years," the Professor explained. "We've had a pretty good time, and it's been interesting. Off and on we've thought of getting away, but it's difficult. Not impossible; we could outwit these simple children; but there's been things to do, and we hadn't got around to it. Only my conscience has bothered me because Lyla ought to have some of her own kind of young people to be with. If it wasn't for that, I might stay here forever. Well," here he sighed deeply, "your coming is going to be a stimulus to help us break loose. Also, you'll be able to help me make some sort of a flying apparatus to get away from here with; there's no other way."

"We've got a good plane here with us."

"We'll have to slip away from these poor folks secretly. They want us. They simply live on the miracles that I perform for them. I keep them terrified all the time, but they like it. Too bad, to leave the poor children."

After dinner the Professor took his guests over the place. He had a huge temple all to himself. The living rooms for himself and Lyla were provided with running water, hot and cold; baths, and lavatories; there was heating and refrigeration and electric light; there was radio reception, but he had not as yet been able to make a broadcasting apparatus. They lived there as comfortably as they could in any modern hotel—and yet, there out of the window, the priests were raising water out of a well by means of a treadmill operated by a naked savage; and a thousand sweating laborers were pushing stone blocks into place by muscular force; women were charring and blackening meat over an open fire.

"You've been here ten years," the Major said. "You're such a missionary, I'm surprised that you haven't got all these people taking baths and using forks, and at least washing their faces. Why keep all these modern conveniences for yourself alone?"

"Yes, that was my dream too, at first. Wonderful opportunity; plenty of labor; certainly enough to be done. I was going to civilize these people, and bring them all the blessings and conveniences of the modern mechanical life. Especially, as one of the first things that happened was that I stumbled upon vast sources of power. Radium is plentiful, easy to separate, and I found an activator, a simple hydrocarbon, which, when mixed with radium, causes a tremendous expansion, probably due to a lot of atomic disintegration; from it can be developed heat, explosion, traction, rotation, anything.

"I could see myself doing away with labor and drudgery for these people, doing all of their work by machinery, giving them leisure for culture, filling their land with railways and factories——

"My dreams didn't last long. The people don't want power. They aren't interested in the saving of labor nor in the work of machines. I tried plows and pumps and electric lights on them. They considered them as objects of worship and were afraid to use them. My playthings were miracles for them; and miracles can't be used in daily work. They prefer to be dirty, to do nothing except what the moment demands, and to fight.

The only thing I can do for them with science is to perform miracles. They need me so badly for miracles, that they'd never let me go voluntarily.

"So I've put my efforts to study and experimentation, used science for my own benefit, and for appeasing their superstition. You've seen some of my stunts. I'll show you more later."

He showed them laboratories in which there were real glass, and chemical balances, dynamos, and electron-tubes.

"How in the world did you make all of this?" Major Morley exclaimed.

"Ten years is a long time and I have lots of skilled help."

Everywhere in the vast laboratory rooms were priests at work. A score of tasks were going on in foundries, machine-shops, electrical shops, and laboratories. At one of the windows stood the mortar that had fired the bomb of radium and activator which had melted the statue's head. They also saw the microphones and power amplifiers that had produced the voices.

"There are a few people out there now; we can give them a little magic," the Professor said.

He took a phonograph disk—it was just a little crude, and they could see that its manufacture had not been quite as skilled as what they were used to at home—and put it in a phonograph, turning it toward the microphone. It produced a soft variety of music of an orchestra of clay-wind instruments that had no little charm and emotional appeal. Out through the window they could see the people approaching the idols in awe and prostrating themselves on the ground in front of them.

"There's a power speaker in the middle idol," the Professor said. "Watch."

He moved some switches, and the eyes of the idol glowed green, and then changed to red. A soft glow covered the whole of the squatting figure, and then dissolved into red, yellow, and green. As the Professor moved a number of switches carefully, one arm of the idol rose level as if in blessing; and the Professor hastened to say their *"Bhayatana Veda"* blessing into the microphone.

"The poor folk just live on this stuff," the Professor said. "I can't make them pump enough water to wash their faces, but this is heaven for them."

The Major and his two companions spent a few delicious days in resting, doing nothing, recuperating from their strenuous experiences. For the Major, the days were especially delicious in the company of Lyla. He was compelled to dress as a priest in order to appear among the people, and in her rôle of priestess, she led him about and showed him many wonders in the depths of the temples.

Then they began to discuss plans for reaching the airplane. It was not an easy task; for the radioactive area would have to be crossed. The "Passage of Mirrors" was guarded by the warriors of the two tribes on its opposite ends. The Professor was a powerful man among the savages, but taboos and customs are more powerful than men, and he could not do as he pleased. Almost every step of his was determined by some custom, rite, or ritual, except in the privacy of his guarded rooms. An incident of a few days after their arrival showed just what one individual was able to do.

Toward noon a troop of warriors on elephants arrived in front of the door, assuming rigid formation with great pomp and ceremony. A huge, ugly, gorgeously decorated savage, wearing a crown and scepter and a perfect arsenal of primitive weapons, came into the Professor's reception chamber. His heralds announced him as the bravest, most powerful, most victorious, most terrible King. He stood in the Professor's seated presence, and bowed and knelt to the Professor, and talked long and circumlocutorily about everything and nothing. After thirty minutes of talking, it came out that he wanted to marry Lyla, the Professor's daughter.

The Major stiffened and was about to rise and say something, but Lyla caught his arm. The Professor took it all calmly and gravely, and appeared to consider it favorably. He said that he was much complimented; but that for a short time at least, he would need the white priestess, his daughter, for some special magic that the god Yishni had asked of him. In a few days he would send word to the King. He moved over to a high-frequency apparatus, took up a bronze ball on a glass handle and touched the king's scepter several times. At each touch there was a long, blue, crackling spark. He then nodded to Lyla, who held a piece of paper in one of the sparks until it caught fire; this he held toward the chief. The savages were very much awed and backed out.

"That decides it," the Professor said. "We're leaving. That man means trouble. He doesn't believe me any more than I do myself."

"He looked scared enough."

"He may be scared, but he'll cause trouble anyway. This is his third time here; he can't get it out of his mind. We can't put him off much longer. Fortunately, I've got stuff nearly ready for our hop."

He took them to see the car on which he had been working. It had wheels six feet in diameter, without rubber tires, for rubber was scarce, and was needed in electrical work. The radium-expansion motor was as big as a suitcase, and developed a good hundred horsepower; and the Professor protested that his machine was most crude and inefficient. The motive power was applied by means of a big propeller in the front.

"Why did you do it that way?" Heyliger asked.

"Because a differential and transmission are hard things to make. A propeller is simple and easy."

The Professor started the motor; its hum rose to a shriek, and the car lurched, though it was held by brakes.

"It needs just a little more work before it will go," the Professor said.

It was irksome to stay in the temple, with no occupation. Heyliger occupied himself with kidding one of the irritable priests, and the Major was watching Lyla in the laboratory.

"I have been thinking of you, looking for you for ten years," he said. "I expected to find traces of your death somewhere. Can you imagine what it means to find you alive and beautiful ——"

"But I am old now. When you knew me, I was young and pretty," she said.

"You are changed. But you are more wonderful than ever."

By way of reply she showed him the changes of color in a beaker, and promised to take a walk in the fresh air with him toward evening.

Things seemed wonderful indeed on that walk, the red sunset splashing on the square tops of the reddish huts. Life now held an inspiration for the Major that he had never known before. He took Lyla's arm, and got a little shy squeeze in return. They walked about the almost deserted court.

As they passed a narrow alley between two temples, there was a rush of bare feet, and Lyla gave a shriek, smothered in the middle. The Major hit out savagely, as several of the naked warriors closed about him. Three times his fist found a crunching mark on faces, before a dizzy blow got him in the head. He just managed to see them carrying Lyla away before everything went black.

The Vengeance of Sirdah-Mu

WHEN he came to, he lay at the top of the temple steps, alone. His head ached sickeningly with every movement. He got up and groaned and staggered in. The old chief-priest Bhaga met him and helped him stand up.

"To the Master, quick!" Morley said.

"They took her," he said to the Professor, as the room reeled about his head. "Lyla. Kidnaped."

The old man clutched his chair for a moment. His face set, and he trembled. Then he relaxed.

"How are *you?*" he asked.

"Never mind me. Get Lyla."

"There is nothing active we can do at present. We can't do anything among these millions of rat-holes. Come."

They went into the laboratory, and started an instrument in front of the microphone. A most horrible clanging started out in the court and was kept up for twenty minutes. As the crowd of bewildered natives assembled, the Professor talked into the microphone, and the bellowing roar spoke to the natives:

"The Priestess Lyla, daughter of the Master, has been kidnaped by ruffians. Listen to the solemn words of the God Yishni. Anyone who brings her back, if a slave, gets his freedom, if a citizen, gets wives, cattle, and slaves, as he wishes. If she is not brought back by tomorrow noon, the whole land will suffer. Every man, woman, and child will suffer!"

Again the silence shut down upon the hushed crowd.

"You got to bluff 'em," said Sergeant Yoder, who appeared on the scene.

"That is no bluff," the Professor said through white lips. "I've got enough radium and activator to blow up this whole city and all these temples, and fuse them into a bowl of lava."

The Major spent a bad night. His two companions sat up with him and talked to him until they fell asleep. Finally, toward morning, the Major himself fell into a troubled sleep. He awakened suddenly, to find it daylight, and with a feeling that someone was standing by him. Looking around, he saw Bhaga leading a ragged, dirty creature, which fawned and prostrated itself befor the Major.

"Why Rhazi, old fellow, I'm glad to see you," the Major exclaimed. It was one of the captives from Sirdah-Mu, dusted all over with stone-powder from his labors; it was also the man whose thigh-bones had been fractured, and whom the Major had carried on a litter. The man bowed his forehead to the ground.

"I can show you the priestess," he said.

"If you do, we'll make a powerful man of you," the Major said. He hastened to wake Yoder and Heyliger.

"Sergeant Yoder, come with me. Private Heyliger, report to the Professor, and ask him to have the car ready to move instantly when we get back."

The Major followed the ragged Rhazi out of the door, in turn followed by Yoder. They went down a long passage, where Yoder darted into one of the laboratories for a moment and came out again. By devious passages, which the Major kept track of carefully in his mind, they came to a corner of the temple. Then they descended stairs, into a damp, dark passage, which, the Major surmised, led under the ground, to another temple. Then they went up crude stairs again; up many more stairs than they had descended, and again through several passages. In front of them was a series of embrasures in stone, with the light coming up between them. They found themselves looking down into a room furnished with barbarous luxury and occupied by a number of women, among whom was Lyla, silent and despondent.

"Some rope," the Major whispered, wishing that he had thought of it before.

"I knew we should need rope, white lord," Rhazi said humbly, and began to unwind yard after yard of it from his waist. He reached into a hiding-place and brought out three wooden clubs. The Major leaned through one of the stone openings.

"Lyla!" he whispered.

He had to repeat it a dozen times before he attracted her attention. Then she looked about her in puzzled alarm.

"Don't let on," he whispered, when he was sure she heard him. "Listen. Look up. There is a rope coming down."

She got the idea immediately, and became listless and drooping again. She sauntered idly toward the rope, and reclining on a skin on the floor made the rope fast under her arms. At her signal the Major and the Sergeant hauled rapidly on the rope. The other women saw her ascend, and fell on their faces shrieking.

Men ran into the room with spears. They arrived just in time to see Lyla pass through one of the stone openings of the ceiling, and raised a hoarse shouting. The Major pulled her through, cut the rope, and they all ran. Suddenly they found their way barred by a tall guard with a spear.

The brave hearted Rhazi attacked him with his poor little club. He got run through with the spear and collapsed with a grunt. But before the guard could pull his spear loose, the Sergeant had landed him one on the skull with his club and dropped him on top of Rhazi. He added another crack to make sure that pursuit would not follow, and they ran on into the tunnel. Footsteps pattered on behind them.

The footsteps gained rapidly, and soon they could hear the savages grunting and the rattling of spears.

"Run!" yelled the Sergeant. He waited behind, shelling out some big thing that fitted tight in his pocket. The others ran desperately. There was a loud boom and a rush of air that knocked them all flat on their faces; and for a few moments a thudding and crashing and rumbling kept up. The Major picked himself up and ran back, calling the Sergeant.

"O.K." grunted the Sergeant's voice, and the Sergeant's figure came crawling up. He was a terrifying sight, blackened, blistered, his clothes in tatters.

"What in thunder——," the Major demanded.

"I thought I'd pick up one of the Professor's radium bombs as we went by," the Sergeant said. "Useful, wasn't it?"

"Well, it nearly cooked you," the Major said with a break in his voice. "Be careful. But it corked up the passage. We're safe."

They found their way back into the temple, where they found high excitement with everyone running to the balconies. The court was full of people, all looking up into the sky. It is inevitable; when you see someone looking up, you look up, too. In spite of their haste and excitement, the three fugitives looked up. Far away to the sky, toward the south, was a myriad of little floating bodies; little round, dark balls in the air. The Major ran for his glasses.

"Balloons!" he cried, as he focused on them. "Their cars are crowded with warriors. There must be thousands of men!"

"Now what's happening?" Yoder gasped.

"They are crude-looking things. Undoubtedly they come from Sirdah-Mu. The priests saw us making our balloon and took the hint. The material was all there for hundreds of big balloons."

"They're not so dumb!" exclaimed the Sergeant in admiration. "I suppose they're keen to clean up on this place."

The hundreds of little spheres became larger as they sailed directly overhead; and the crowded people in the court whined with fear and fell flat on their faces. The Major hastened with Lyla to her father. The Professor said not a word. He patted Lyla's shoulder and shook the Major's hand. Then he went to the microphone.

"This is Yishni's punishment to his people because their king abducted the daughter of the priest," bellowed the idol.

The riot started. The people began looking and shouting for the king. There was a raid on the temple where he made his palace, and the Major feared that the king did not last long in the mêlée that could be seen through the temple doors.

But again their attention was occupied by the balloons above. The sky was full of them directly overhead now. As they sailed over the city, a shower of arrows came down, wreaking deadly havoc among the crowd. On the far side of the temples, the balloons slowly descended.

"There's going to be a fight," the Major remarked. "If we're starting back to Fort Carson, now's the time."

They all hastened to the car and clambered in. There was plenty of room for all of them, in addition to a number of large bundles which already lay in the car. Poor old Bhaga, the priest, refused to get in, though he knew that he would be killed.

"I know some of the Master's magic," the old priest said, shaking his head; "perhaps the gods will give me an opportunity to turn it against our enemies."

The Professor started the motor, and the sound of the propeller rose to a shriek. The car rolled ahead, with the Professor at the steering-wheel. Down between two temples he guided it, and to the left, away from the court, toward the edge of the city of huts. For some minutes they were not seen by the crowd and met no one. Then suddenly there was a shout of "Priests!" and drums began to rumble. The machine was still moving fairly slowly, and had not yet gathered much momentum. Three savages with spears stood in front of the car, trying to block its way. It was moving along so lightly and slowly that their threatening bulks alarmed the passengers.

However, the Professor shouted a warning to them. In reply, they brandished their spears. Then it happened in a moment. The propeller struck one of the spears, and drew the man toward itself. He seemed to melt into the blur of its whirling, and one by one his companions did the same. There was a high-pitched rattle, and small pieces of things shot out tangentially from the propeller. A red mist sprinkled back into the car and made the fingers and faces of the passengers sticky. Lyla shuddered, and Heyliger grinned.

Other warriors running up, seeing what happened to the first three, backed away. They hurled a few spears, but did so half-heartedly. Soon the car was out of the city and headed across the prairie.

"Now we're safe!" exclaimed the Major.

"Guess again," said the Professor. "Look behind you."

A troop of elephants ridden by armed men was careening after them at a good speed.

"You see," the Professor said. "The nature of the savage is a queer thing. They hate us badly enough to kill us; but they need our magic against their enemies; they want to save us so that we can save them."

The car was making fair progress over the corrugated ground covered with long grass, but the elephants, covered with gesticulating men, kept at a good distance behind. An hour of pursuit elapsed, without much change in the relative positions of the pursued and pursuers. Evidently the elephants were able to make about as much speed as the car. The savages seemed to be quite enraged and waved their spears madly.

On ahead was the bare, bleak zone of radioactive earth, death to anyone who tried to cross it.

The End of Rhadi-Mu

"THEY think they've got us," chuckled the Professir. "Well, I've figured on this very thing. The radioactivity will not affect our machinery, and I'll take care of our bodies. Open the bundles."

There were six heavy bales. Each contained a set of overalls, gloves, helmet, and slippers, all tremendously thick and heavy.

"They are all lead lined," the Professor explained. "Put them on quickly and leave no crevices for the radiation to get through. Hurry, because we're not stopping. Major, take my place at the wheel as soon as you get yours on."

The elephants were reining in, as they neared the edge of the bare ground. They had expected the fugitives to stop and were rather astonished; the burning death was more to be feared than battle or torture. But the car plunged on, and in a few minutes its occupants were transformed to clumsy, grotesque figures. The suits weighed fifty or sixty pounds apiece and made their wearers look hideous. The machine leaped on over the thinning grass, and into the bare, bleak region. Through their goggles, the fugitives could see the bare, bleak soil, without the least living thing on it.

After a pause, and much movement and gesticulation on the part of the warriors, the elephants came on, in pursuit, right over the radioactive earth.

"Fools!" muttered the Professor.

"Do they know what this will do to them?" asked the Major, putting his helmet close to the Professor's.

"They know. But they are fanatics. Or brave men. Suit yourself."

"Or, probably this will be no worse than what will happen to them if they come back without us."

"You see, they would have plenty of time to catch us and deliver us before they died of radium burns."

They had gained a good deal on the elephants, and the professor suddenly stopped the propeller and put on the brakes. The others looked at him in amazement as he got out of the car, and scooped up several lead boxes full of rocks from the ground. He put these carefully into the car and started again. The savages were shouting at the gain they had made.

"These little rocks will make us all rich when we get home," the Professor said. "There is more radium in these boxes than the whole civilized world possesses."

It seemed only a few minutes before they reached the further edge of the radioactive zone. This side was rough going, because the rocks were larger; and the elephants gained on them. No immediate effect from the radium was apparent on either men or animals. The riders brandished their spears and yelled. Major Morley, the Sergeant, and Heyliger were busy comparing notes, trying to decide which way to go to find their plane, when suddenly they caught a gleam of the sun on its metal fuselage, a mile or so away. They headed toward it, and reaching smooth ground soon drew away from the elephants. Now they were planning on how to dispose of five people in a plane meant for three.

There came a groan from the Major, who was watching the plane intently with glasses. A group of brown savages emerged from the woods, saw the plane, and ran toward it. They gathered about it and approached it hesitatingly. New ones kept coming out of the woods, till they numbered nearly a hundred.

"Hell!" said the Major softly.

"They seem to be our old friends of Sirdah-Mu. Think we can handle them?" asked the Sergeant.

"We've got to," exclaimed Heyliger. "I won't be stuck here another year or two. I got just enough of this country."

They continued to drive the car toward the plane. One savage, as they watched, stuck his spear through a wing. The Professor stepped on his accelerator, and the shriek of the propeller made the savage drop his spear.

"We've handled them before," the Major said. "Got to bluff it out somehow. These fellows behind us won't give us a lot of time, either."

As the car drove up, the natives shrank back. The white men climbed out, hampered by their lead-lined garments, the Major assisting Lyla, and started in determination toward the plane. The savages looked, gave one shriek, and turned in precipitate flight into the woods. The white people were quite as much surprised as were the natives, until they recollected the grotesque appearance of the lead-lined suits, and especially of the goggles.

They all piled into the plane, and turned over the motor. To their great joy, it responded perfectly. The Major did not wait for it to warm up, but let the car glide on over the grass. As they looked back they saw the elephant riders pursuing the naked spearmen into the woods, as though they had forgotten about the white gods. But, their own death, some weeks later, would be worse.

For a mile they rolled along the ground on the wheels of the plane. Then the Major tried to turn it upwards. It bumped and bumped, rose a little, and bumped again.

"No use," the Major said. "She wasn't made to carry this load. Throw the lead suits overboard."

One by one the suits thudded out on the ground. The plane did a little better, but was still unable to rise higher than a few feet, nor to remain up more than a few seconds.

"Everything out that we can spare!" ordered the Major.

Many instruments were thrown out. The cameras and plates, amounting to two hundred pounds went over, with many a groan from Yoder. He leaned over and watched them crash to the ground. Water and food supplies went out. They permitted the Professor to hug his lead boxes, providing it were possible to rise. He had thrown out his shoes and coat, when the plane finally soared up gracefully.

"We'll go up high enough to get a last look at the temples," the Major said to the Professor. "You are no more curious than I am as to what is happening there. It will take just a moment or two."

Soon they could see the temples and the patch of red huts. When they came near enough, they could see through their glasses that fighting was still going on, and fires rose here and there.

Suddenly one of the great temples seemed to rise bodily into the air. A blue flame appeared beneath it; and as the temple dissolved in it the others rose up after it.

Everything, temples, hut-city, and fighters, all dissolved into a blue, vaporous mist.

"Too bad!" exclaimed the Professor. "It was old Bhaga's work. He knew about my stores of radium and activator. Now that place will be another radioactive zone." He drew a sigh. "Well, it can't be helped. We'll go home and work out some of these problems that occurred to me here."

The nose of the plane was turned toward Fort Carson. The Major was holding Lyla's hand, regardless of the presence of the others. The propeller made too much noise for talk, except through the phones, but Major Morley was thinking:

"I thought I was old enough not to be so silly. But, you see, it took me ten years to find her!"

THE END

Seeds of Life

By John Taine

(*Continued from page* 505)

again and again. I had a vision only to blunder irrevocably. The one that I loved is dead—dead as the whole futile human race will some day be, and she has left me a son, the sum and substance of all my blunders. Like you that I despised and would once have helped, I am a failure, undone by my own humanity. I cannot hate you, for you are reptiles, even as I am. Your intellect, like mine, at its best, is no better than the blundering instincts of a thing that perished before the first of our kind was conceived. Why prolong the farce? For thirty years you will see yourselves as you were, are, and shall be. Then the curtain will drop forever on this silly interlude of eternity. You will find my body with my son's. His mother would love neither of us, could she see us now. 'As I am, you shall be.'"

"I guess you're wrecked too," Crane remarked to the president as he finished broadcasting De Soto's testament. "We all are. Shut up! Get out."

The president left hurriedly, and Crane called up the doctor.

"Come round to Bork's place with me, will you? I haven't the nerve to go alone."

Fifteen minutes later they were cautiously admitted by the police. Crane was now responsible—the extras had restored his good name. The captain volunteered to lead an expedition into the barricaded den.

"Let me go first," he advised. "It has been moving about and whistling birdlike for the last two hours."

The barricade was cautiously removed. Not a sound issued from the room. The living thing within had taken its brainless revenge on the author of its unnatural life. With steady hand the captain aimed for the reptile's rudimentary upper brain and pulled the trigger. Three short convulsive jerks, and the monstrous son expired in shambles which had been his father.

THE END

My Robot Son

By Bob Olsen

I

My desire for a son was intensive—
  How I longed to know fatherhood's joy;
But a marriage I deemed too expensive,
  So I bought a mechanical boy.

II

Now my Robot's the pride of his daddy;
  No mere every-day child could compare
With my model electrical laddy,
  Whose deportment is perfect and rare.

III

He gets up just as soon as I wake him,
  Always washes his neck and his ears;
And I don't have to scold, beat or shake him.
  (He never repeats what he hears.)

IV

When he falls there's no need to console him—
  When he's called, he obeys with a rush.
No one has to compel or cajole him
  To eat carrots and spinach and mush.

V

He will never swipe pie, cake or candy—
  He will never get saucy, or lie;
And his English is just simply dandy—
  He could no more use cuss words than fly.

VI

It costs little to keep and support him.
  He would much rather labor than play.
Neither food, clothes nor toys have I bought him,
  Yet he always is happy and gay.

VII

Since I've known these parental enthrallments,
  Now to own him completely I pine.
I'll be glad when I've paid ten installments—
  Then my son will be totally mine!

Dramatis Personae

By Joe W. Skidmore

UNDOUBTEDLY, the last generation has raised its eyes to heaven in horror at the seeming delinquencies of their next generation, just as this generation wonders, aghast, what is going to become of the younger generation. Yet, as circumstances and conditions change, moral codes and customs must change. It must seem to a good many of us now that everything has changed so much in the past fifty years that the future cannot possibly be so very much different. But can't it? Our new author has some ideas on this subject himself, and because he is an excellent wielder of the pen this story is well worth publication in AMAZING STORIES QUARTERLY.

Illustrated by MOREY

INTERSTELLAR projectile No. H 45013 was flashing through space at easy, comfortable velocity. Hurtling 1500 light miles per second through the absolute zero of dead, dark void, that had neither heat nor atmosphere. Speed in unlimited space was merely a relative matter in the year 22930.

F. A. N. 24 sat before the highly intricate controls, her eyes concentrated on the many complicated instruments before her. A worried look came to her extremely aesthetic, intelligent face, for the space compasses were gyrating strangely.

It was incredible! Her massive, bulging forehead wrinkled in thought. The compasses were magnetic to only the metal star Lindberg, and the great interplanetary car was now far beyond the reach of that planet's attraction.

"Come, M. E. A. 16, there is something strange about the compasses." The beautiful girl flashed the words by a mental projection of her thoughts.

"Coming, Fan," registered a clear impulse on her super-intelligent brain.

A tall, athletic man, who likewise had sharp, keen features, with immense forehead, moved into the large control room. He propelled himself gracefully and cautiously, gripping handholds that were numerous about the room and on the walls. He released one hold only when he had grasped another metal handle.

For the projectile was in the empty and terribly strange "empty spaces." It was extremely dangerous for the two occupants of the space car to move about quickly without physical restraint, for, being in free space, their bodies were absolutely weightless. The floor and ceilings were considered merely walls. There was no "up" or "down" in the weird, unnatural conditions of vacuous void. The law of gravity was not present. Bodies moved only in their accidental courses and followed only the laws of inertia.

In the realms of nothing, a body would eternally travel at the speed of its initial impetus through the deadly emptiness, unless it struck an opposite wall of the projectile.

With the inherited skill of man's 5000 years of actual interplanetary travel, the god-like figure of the man pulled into a fixed chair next to the woman. As he floated into the seat, soft but strong elastic bands automatically clutched him firmly.

It had for many centuries been the custom and rule of the period 22930 that when a man and woman were to marry, they must first spend one year together. First, they were graded and mated as to intellect and traits, by the ruling Board of Eugenic Science.

F. A. N. 24 and M. E. A. 16 had elected to spend their probationary trial-period traveling in space. The close contact would be a great test of their deep, fine love.

Love—the strongest of man's emotions, had come through the ages of scientific wonders and marvelous conclusions of cold calculations and practicability—unchanged.

The man's keen, shrewd eyes appraised the many instruments with a split-second glance. When his eyes paused at the misbehaving compasses, his face settled into a worried look.

The two began to converse—not by speech—but by mental projection of their thoughts, each to the other. A sort of advanced mental telepathy.

Eternal silence prevails in the great abyss of space, so it was perhaps just as well that man had practically lost the power of articulation thousands of years before.

True, in the man-created artificial air within the projectile, sound waves of speech would have functioned in a normal manner. But why should superman or woman communicate with the obsolete method of speech, when, by flashing mental thoughts, they could converse with

Then, with fright-stricken brains, they saw a great sun fragment dissolve into Mars, and a vaster explosion add thousands more of broken pieces of worlds to the hurtling masses.

1000 times the speed of speech—and with no limitations of a vocabulary? The two exchanged flashing thoughts quick as the ether waves of radio.

"It is incredible, Fan, check the dimensional space compasses against our dead time and course reckoning."

The girl's slim, quick fingers made adjustments with strange, intricately wonderful gauges and instruments. Her fingers moved and adjusted with a speed that could not have been noted with a human eye and intellect of the year 1930.

She turned clear, marvelously intelligent eyes, now frankly worried, to the man.

"No use, M. E., they will not function."

"Cosmos!" impulsed the man, with a sudden force that startled the girl's mind. "Some catastrophe has occurred. Check our exact position at once with Earth and Mercury. Use the atomic energy radio sets—conserve our solarium power storage—I will ascertain our speed and the friction temperature of our shell. Our instruments must have come suddenly within the influence of a strange wandering satellite, or a stray, powerful energy ray. It is uncanny, amazing."

Again two pairs of supple, trained hands made astonishingly quick movements.

"M. E., we are 20 light years beyond the center of the Perseus galaxy. I am searching the void for any air liners to check our position by radio deflection." All this action and exchange of thought was miraculously accomplished in a heart-beat.

"Turn on the reflectroscope," impulsed M. E.

A luminous, unearthly glow at once filled the room, and a great smoked glass screen immediately glowed.

On the glass was instantly reflected an infinitesimal part of the known universe. Quickly, skilled fingers turned the screen on its universal bearings.

Their eyes turned to the Earth by instinct. Clearly depicted on the screen were reflected Earth, Jupiter, Mars, Saturn and all the planets of the Solar System.

Then their startled eyes beheld the most astounding and awful sight that man and woman had ever beheld since the birth of time.

The sun had exploded!

Its huge, flaming gaseous fragments were hurtling at unbelievable velocities through the Solar System.

True, the reflection of the moving, hurtling, broken pieces, as large as planets, moved slowly across the glass, but their actual speed was an incomprehensible horror, even to those super-wonderful minds.

Then, with fright-stricken brains, they saw a great sun fragment dissolve into Mars, and a vaster explosion add thousands more of broken pieces of worlds to the hurtling masses.

"God! Fan, the Sun has exploded—the whole universe is running wild!"—

F. A. N. 24 recepted the message impulses slowly. Her keen mind was numbed with the unbelievable, awesome terror of what was being unfolded like a slow motion picture on the screen before them.

"Universal Heavens! I'll radio Earth." As M. E. impelled that thought to Fan, he made frantic, but efficient, adjustments with the powerful radio apparatus—all the while their eyes were glued on the ghastly, gruesome tragedy of worlds that were disintegrating in a horrible debacle and smashing confusion.

The air in the projectile smoked and vibrated as the terrific atomic power of the radio set was turned full on.

A grey, hopeless look crept into the man's face. A look of nameless, unbelieving fear.

"Gods! Fan, the universe is doomed. Earth does not respond. Their sending sets must be ruined."

In their great grief and shocking terror, the man and woman nearly reverted 8000 years, for their thin lips puled forth strange, unintelligible sounds.

Across the screen now moved a vast, flaming mass, straight toward Earth!

The Earth was doomed in a few seconds!

Then the man, No. M. E. A. 16, proved the courage and erudrtion of 10,000 years of progress and thinking. He stiffened in his chair. His eyes seemed to sink even further in his massive head—tight lips drew more taut—eyes became lusterless and pin-pointed, as to some vast distance. The wisdom of ages of culture and scientific advancement was reflected on his sad countenance.

F. A. N. 24 knew the other was concentrating to project his mind to Earth. She assisted him by making her mind void of thought, so as to send out no disturbing impulse.

Seconds passed that seemed eons, and suddenly the tense face of the man slightly relaxed.

M. E. was communicating with the super-intellects of Earth!

Then in the minds of M. E. and F. A. N. registered the most awful, terrible, uncanny message ever dreamed or conceived. An appalling message of death, destruction—and desperate hope.

"To all interstellar cars outside area of Solar System.

"Catastrophe untellable. Sun has exploded. Solar System partially destroyed. All doomed, including Earth. Proceed at once to some distant star and start the human race anew. God be with you—and"—

The terrifying message abruptly ceased, and upon the screen was simultaneously reflected a nightmare horror.

Collision of the great speeding sun fragment and the Earth had occurred! Where the Earth had been were suddenly gaseous flames and exploding, disintegrating chaos.

THEN a most fearful, incredible celestial phenomenon occurred! All the blazing, rushing masses suddenly dashed together as if they were fragments of iron flying to a powerful electro-magnet.

The mass of broken worlds fused instantly into an immense single, fiery unit—vast in size beyond human comprehension.

The Universe was in travail and a great new, stupendous Sun became suddenly born!

The two people—humans—sat dazed. Even their superlative minds were stricken with the magnitude of the disaster they had witnessed.

Although grief and sorrow were practically unknown to the two, great tears streamed down their pale faces, as nearly atrophied lachrymose glands reacted to their emotions.

Although woman for generations had been man's equal physically and mentally in all matters, the woman, F. A. N., now cowered to her man's arms, with clutching, trembling hands. Her thinner cloak of self-sufficiency had fallen away.

Man had come centuries before, in his wisdom and great understanding, to regard woman as a joint sovereign of the worlds. Woman's lot improved as civilization advanced, until at last she was man's equal in every way.

But now those two brilliant, advanced humans became temporarily primary from the terror of their minds. And the woman wept in panic and crouched in the male's arms for protection.

Instinct is a most powerful factor in human relations. M. E. felt strongly for the first time in his 240 years of life the instinct of a male to protect his woman. Comparatively young, still he knew that ages before, in days of superstition, ignorance and bigotry, man had considered woman merely a chattel and slave.

The great surging urge to protect F. A. N. spurred M. E.'s brain until presently he began to reason clearly. He sent a thought wave to F. A. N., but received no reply.

In the first danger and crisis of many centuries man had proven his mental superiority.

Life was very kind to humans in 22930. Disease, poverty, war and all the things dreaded by man had long since been conquered by practical science. Marvelous mechanical achievements had increased the comfort and joy of living. Danger and the factor of personal risk had been nearly forgotten because of man's skill, learning and accomplishments.

But, in the forgotten dark ages of savagery and barbarism, woman had been in a terrible, different status, and it was a natural reversion of things that M. E. should suddenly become the leader of the two.

M. E. worked frantically to quiet F. A. N., and finally she lay relaxed and ceased to utter animal-like whimpers.

As the ruby light waves of a morning sun filter into an opened door, so did the consciousness of F. A. N. become clear and her mind again rational.

With instinctive caresses that were entirely strange to him M. E. loved the woman.

Then both normal, but still horribly amazed and perplexed, they did what humans have always done.

They petitioned to the Great Master Mind that they be guided in the time of their great trouble.

All the while the great projectile slipped with full velocity like a spectral opaque shadow through unlimited, unknown, fearful space.

MANY ages before, a great philosopher had written "If there had been no God, it would have been necessary to invent Him."

A lonely man on a desert island gazes daily, year by year, for the longed-for sail to appear on the horizon. Hope never entirely dies within his breast.

Religion is hope, and is eternal as time.

Hope filtered into the consciousness of the two super-people and they began to plan for their future.

"Proceed at once to some distant star and start the human race anew." Never were two people charged with such a strange, vital mission!

The super-people of 22930 possessed a most beautiful and broad religion. It was builded on a universal, firm belief in a Great Master, and had been sustained by astronomical and scientific research. A hopeful, reasonable, practical belief that had long since been entirely cleansed of superstition, creed, ritual and charlatan distortion.

Even in their vast wisdom the super-people realized keenly that they were but groping blindly at the bottom of a vast sea of yet undiscovered wonders and possibilities. Erudite as they were, they believed that the Master Mechanic intended that man should slowly advance, study and gain in understanding—forever.

Ages before, the cohorts of sciolism, intolerance, legendary superstition and narrow creeds had fallen before the glorious achievements and knowledge of practical science.

People had come, on all the planets in the Solar System, to have a single belief and understanding. The wiser and more learned they had become, the more they realized that they did not even then in the slightest measure comprehend the Infinite Plan.

Atheism, nescience, apocryphal beliefs, dogmatic hypocrisy and bigotry were but gruesome memories of the past.

The great warfare of Theology against Science in the years of 5000 to 6500 had been a titanic, bloody struggle.

But science had won and all the people accepted the Great Plan and were henceforth guided by an earnest belief of hope, love, service and scientific accomplishments. Their religion was practical and based on facts.

Hope and faith, guided by logic, slowly crept again into the minds of F. A. N. and M. E. and they began to reason sanely and converse in regard to their uncanny dilemma.

"It is incomprehensible, F. A. N. Where in the Cosmos can we go?" projected the man, as he began to check and adjust the control instruments. His adroit fingers moved a lever that increased the volume of the atomic energy rays that burst forth from the impellation tubes with immeasurable force and cosmic velocity.

"I cannot say," answered the girl slowly.

"We are now entering a zone in space never before traveled by man. It is appalling to even think of all the lives lost in the Solar System Planets. We must obey the mandate of the Control Board at all cost. Turn on the reflectroscope again."

F. A. N. obeyed the order mechanically. She was still suffering from shock and grief.

Again the great screen glowed and was turned so that the area of the devastated Solar System was reflected upon it.

In the middle of that vast area was an immense sun.

No planets existed in that great volume of space which had just before been happy, living worlds.

M. E. knew that the awful scene depicted had in reality happened many hours before it was actually reflected on the screen, for even light takes time to traverse such a vast distance.

Then a new, terrible realization came to M. E. as he turned the screen to three dimensions.

They were lost in Space! Swiftly the two checked radio compasses and gauges, but it was quite useless. No answering vibrations of radio waves responded to their powerful impulses that they literally hurled into space. With all the well known Planets destroyed and melted into the new Sun, they could find no point to determine their position.

They could find no star or galaxy that seemed familiar to orient their place in space.

M. E. turned the screen so that it would reflect that area of space toward which they were speeding. That proved to be a shrewd idea and a matter of interstellar navigation safety.

On the screen faintly glowed a great group of strange appearing stars. To the left one gleaming star appeared brighter and larger than the countless hosts of others.

Still the great projectile slipped through the void now at 4000 light years per second.

M. E. and F. A. N. became again efficient humans with the marvelous intellects of 22930.

Days and weeks slipped by and the great lone star soon began to appear as a giant moon in the heavens.

The task of running the great projectile took every moment of the man's and woman's time and they never slept.

Man had learned that sleep was not necessary and that the brain could rest, a section at a time, at his entire will and control. The days of ignorance, when man had permitted sleep to rob him of nearly half his precious lifetime, were almost forgotten.

Finally, one day in their thirteenth calendar month, the great star Planet was very close, and M. E. began to retard the speed of their cylinder by expelling from its sharp nose, repulsion atomic rays.

"F. A. N., my loved one, there is our new world," impulsed M. E., with a great, fine look in his eyes. "There is where humans shall start anew, and our new world shall be named Alpha."

M. E. and F. A. N. proceeded with the task of slowing the great interstellar car cautiously. Gradually they retarded its terriffic speed, using great care.

For the space car and its occupants had been reduced in actual size to that of electrons or smaller, because of their speed, which exceeded that of light.

Einstein and other great primitive scholars had ruled ages before that an object diminishes in size as it gains speed, until it reaches the speed of light, and then it ceases to exist. Those same brilliant minds also contended that if one traveled at the speed of light, time would "stand still."

Scientific modern man had found, however, that those great "Columbuses" of science were only partly correct. Years of interplanetary travel had proven that while size diminished as speed increased, it was possible to continue even beyond the speed of light and still continue diminishing in size.

They made the astounding discovery that there was absolutely no limitation to the "smallness" of matter, just as there was no limitation to "largeness."

It had been found, too, in space-cars traveling beyond the speed of light, that the food and water molecules on board were proportionately reduced in size. This was fortunate, for an individual reduced to the size of an atom certainly could not drink water that would be made up of molecules thousands of times the mass of the person.

Experiment had proven, too, that time is steadfast, eternal, and goes on in all conditions. Time was found to be the governing rule of all planetary movements. Time went on relentlessly, no matter what speed was attained.

When the gauges showed the projectile was at the same speed as light, M. E. used more care.

As speed diminished, their size would steadily grow. Generations of experiment had shown that if the change from electron to normal size was made very gradually, it had no ill effect on the human structure. Many thousands of lives were lost by the "space bends" in the early space travel.

Steadily for twelve days M. E. slowed the car until its speed was comparatively slow.

The mighty star which they had named "Alpha" now loomed very close.

The car would soon be in Alpha's atmosphere and gravity attraction!

M. E. was too intelligent to approach the star too suddenly.

He must first "feel" out its gravity pull. Landing the projectile was a very simple matter to M. E. as soon as he had determined some facts. He would simply diminish his speed to about 1000 miles a second and let the great projectile rush faster than any bullet into the planet!

His knowledge and experience told him that when the projectile entered the atmosphere of the strange planet, a great friction pressure would be built up against the shell, which would reduce its speed as a sponge absorbs water.

The projectile would gradually slow until its speed exactly equaled the gravitational power of the planet, then it would fall to the surface like a plummet.

At least it would have done so had not M. E. sent out atomic repelling rays and hovered the car ten miles above the surface.

Considerable time was spent by M. E. and F. A. N., hovering and studying the planet's surface. They were greatly excited as they looked below through powerful glasses.

"Look, F. A. N., see those people and buildings—strange buildings! Alpha has atmosphere and temperature that permit human existence!"

"Yes, M. E., and the instruments show its gravity pull is quite a bit stronger than was that of Earth. It must, then, be larger than was our dear Earth."

F. A. N. surreptitiously wiped a tear away as the thought of her home was flashed to M. E.

The man's sensitive mind noted the sad thought and he flashed.

"Never mind, Love, we are going to land."

Busy hours followed as the great cylinder was permitted to slowly settle toward a flat vacant area.

Finally, at 1000 feet, M. E. and F. A. N. looked down. There, on the level plain below, were thousands of milling, excited people. They scattered in all directions and fled in sheer terror as the space-car settled crunchingly on the level field.

M. E. and F. A. N. had followed the orders of the Control Board.

And the planet was peopled!

MINUTES passed while M. E. permitted a slight amount of outside air to enter the projectile through a small tube. With great inherited skill he tested the air sample.

"The atmosphere is fine, F. A. N., start opening the main outlet." As F. A. N. started the mechanism that slowly opened the thick serrated door, M. E. strapped weapons on his body.

Strange weapons that M. E. fastened to his middle. They were short, pistol-like tubes. They could pour forth shattering, rending energy rays that would instantly destroy an entire army. M. E. had never known physical violence, but he possessed a sense of caution and it was possible that the inhabitants of Alpha might be hostile and attack them.

Cautiously M. E. and F. A. N. stepped from their space-car and a strange sight met their eyes. It seemed that M. E. had no need of his weapons.

Upon the ground, flat on their faces, lay a multitude of people. They surely felt that M. E. and F. A. N. were some gods visiting them. Their heads were bowed in apparent worship and awe.

The two visitors moved forward toward the assemblage slowly. They tried to think of some way to converse with the inhabitants of the star.

After some time a great, fine figure of a young man arose from the front rank of the crowd and approached the two. He was a heroically built young man, with the identical physical characteristics of Earthly humans. With trepidation the Alpha man came forward, reverence and wonder in his eyes. The magnificently moulded and muscled body was but partly covered with some animal's skin.

The remainder of the great assemblage remained prostrate. It was obvious to M. E. and F. A. N. that the courageous man who had risen was the leader.

The splendid star man moved slowly, fearfully and reverently toward the Earth visitors. At ten paces distance he stopped and flung himself to the ground in an attitude of worship. Strange musical syllables poured from his lips. The mighty, graceful body moved in a ritual of some grotesque worship.

F. A. N. and M. E. could not interpret the speech, but what the star man was articulating was known to them. They could instantly read the thoughts of the star man as plain as type.

In fact his thoughts were registered on their superbrains, even before the star man moved his lips. M. E. nearly smiled at the ease with which he divined the man's thoughts.

For thoughts have no language when expressed by telepathy. On all planets all mankind thinks in the energy vibrations.

So, while the star man canted on in a tongue that was at first utterly strange to the two, they knew exactly what he was saying.

"What a man," impulsed M. E. to F. A. N. "He thinks we are Gods—supreme beings."

"Yes, M. E., and note his superb body. We shall name him Heracles, for truly he is a mighty man of sinew."

M. E. and F. A. N. were exchanging lightning-like thoughts while the star man was cantingly speaking. The speed of the star man's thoughts was synchronized with his slow speech. It was very easy for the two to converse while the other was intoning in deep chest tones.

"Great Masters, we bend worshipful bodies. We worship. We adore. You have come in answer to our petition for help. We are in great trouble. Powerful Ones, will you help us? We beg in all humility—"

The man went on—fervent, impassioned speech rolling from his lips. F. A. N. and his companion, now entirely relieved as to fear for their personal safety, listened intently.

It took but a few moments for their agile minds to grasp the fundamentals of the star man's speech. For, knowing his thoughts before they were uttered, it was an easy task for them to soon comprehend the language.

Strange as this might appear to a human of 1930, it was just the same as when a speaker talked into a radio microphone. People 5000 miles away listening to their radios would actually hear the words of the speaker before those in his audience only a few feet away.

"I believe I can speak to him now, F. A. N.," projected M. E. "His language is primary—similar to that of an ancient Chinese. I will try. The others are drawing cautiously near. They all think we are Deities of some kind."

"Yes, they are a very primitive people, but their classic features and clean cut bodies denote spirituality and fine ideals."

"Arise, Heracles, my fine fellow. Fear nothing. We will not harm you or your people."

Heracles rose slowly to his great, graceful height, his face shining with an incredible joy.

"Then you are the Gods that Jaon dreamed of? Her vision said you would come to help us in our great need."

"Who is Jaon?" queried M. E. in strange, unpracticed syllables.

"Jaon is our great and beautiful princess, who rules our land. I am Kalo, her first Chief."

"Well, Kalo, if a woman rules your land, your name henceforth shall be Heracles. For a woman has so decreed."

"It is good, Great Ones. Heracles shall be my name. May I speak to the multitude?"

M. E. consented and with great length and detail Heracles explained to the crowds in a voice of Stentor. Finally he turned with great respect to F. A. N. and M. E.

"Come, Great Ones, to the Temple of Jodiz. The Princess Jaon will offer our best and then you will save us from the terrible monsters of the dark. In the last cycle they have devoured nearly half the population. Come."

IT was well for F. A. N. and M. E. that people in 21930 had reached, through scientific diet and exercise, the near ultimate in physical strength and endurance. Strong and vigorous, yet they keenly felt the long walk that followed.

Their muscles and sinews were not accustomed to the terrific gravity pull of the star Alpha. A mass that would have weighed 100 pounds on earth weighed 142 pounds on Alpha.

"We shall soon accustom ourselves to this," transmitted M. E. as they strode heavily along, packed close by thousands of the amazed, excited star people. "No wonder these folk are built so powerfully."

Finally they came to an immense building of a strange, domed, rounded architecture. Everything was rounded—no squares or angles. The building, which was by far the largest of a legion that extended far beyond, yielded a startling, inspiring sight to the two Earth visitors.

Even their superlative minds were awed at the splendor and mechanical marvel of the structure. The great massive stones that comprised the buildings were of some carbonaceous, clear stone that reflected the light like a giant diamond with a million facets.

They finally entered a great, fine circular room, with an immense swelling dome. Colored stones resembling rubies, sapphires and turquoise reflected and colored the light.

At one end a great circled throne stood in majestic splendor.

The excited Heracles, with a profound bow of deference, advanced toward the throne and began slowly to relate his marvelous story to a woman seated on the throne. When the gladiator-like man had finished, the woman arose and walked to M. E. and F. A. N. Majestically and gracefully she moved, but with greatest worship and humility. The powerful Heracles followed as a bodyguard, love and worship for his Princess in his heart.

M. E. gasped at close vision of the Princess. Her perfect beauty was like an overpowering inhalation of some powerful drug. No sculptor ever chiseled a face or form more perfect. Her beauty was perhaps pagan-like to M. E. and F. A. N., but intelligence and dignity were written on the beautiful face.

Such a perfect human-like beauty was a great surprise to the two astonished Earth people.

"Zeus! F. A. N., she is the reincarnation of the ancient Venus, Psyche and Cleopatra." M. E. felt a strange sensation at the utterly human, emotional, sensuous beauty of the girl. Earth man and woman of 22930 had paid a certain price for their mental advancement, great understanding and freedom from disease, pain and struggle. Many emotions and passions that had been induced and nursed by dangers, hardships and grim necessity of life, had almost ceased to exist. Their realization of pleasure, love and other emotions had become largely a mental consummation.

Some vague, powerful, inherited primitive instinct gripped the very soul of the Earth man. His vagrant unusual reflections were rudely interrupted by an impulse from F. A. N.

"Beautiful, magnificent," answered F. A. N. To M. E. her impulse came in a new, harsher vibration.

A great philosopher 100000 years later wrote—"Love of man and woman for the other is a jealous passion and will always be so, until the end of time."

THE Princess Jaon bowed low to the two in a suppliant attitude of worship and reverence.

"Great Shining Modelors, you have come in answer to our great trouble. Rest if need be. I and my people are thine." The words came in pleasant tones like the soft, dulcet music of a muted harp.

Jaon went on in awed words until M. E. gently interrupted.

"We are not gods, Princess Jaon. We are travelers—humans like yourselves—only from a far distant planet called Earth. It is now destroyed. We have come here to live and to help you if we can."

It was plainly evident that the Princess and Heracles did not believe the frank statement of M. E.

M. E. began to question Jaon and read her thoughts.

Then the two earthly visitors learned many strange things in a short time as the thoughts of Jaon unfolded a marvelous history to them.

A WEIRD human history was related to M. E. and F. A. N., who listened—or rather read the star people's minds—intently.

A pathetic story of a brave, earnest people who had come up through evolution, struggling against seemingly insurmountable conditions. Dangers from the land of darkness had constantly beset them, but they

had gone bravely on, upheld by a resolute belief in their religion. Besieged always by nightmare horrors of strange prodigious beasts, physical strength and valor had become a necessary asset. Constantly they had been forced to fight the beasts of the darkness, with only their primitive weapons to aid their sturdy strength.

From the great scholars and minds of Alpha gathered before them, M. E. and F. A. N. soon had all they knew in detail impressed upon their minds.

It was highly bewildering to the Princess Jaon to realize how quickly her strange visitors absorbed the entire learning of her most wise counsellors. But then Jaon and the others thought they were in the presence of gods. And gods knew all. Humans have always vested their gods with supernatural powers. All of which is proper.

In reality it was a strange situation for the two highly advanced Earth people—listening to, or reading a weird history of primitive humans 25000 years behind them in learning and advancement.

It was like a professor in mathematics helping a child to calculate two times two.

The humans of Alpha were in about the same period of evolution as the earth people had been in early Biblical days.

The interview lasted for some time and finally M. E. and F. A. N. had all the knowledge of Alpha that its greatest minds possessed.

Of course they had, by reason of their infinitely keener minds, already grasped and deducted even more about Alpha than the wise men knew. The greatest intellect on Alpha was relatively a simple mind compared with the brains of the two.

A great man many thousands of years before, on Earth, had written—"A man is wise only on condition of living in a world of fools."

If all men were equally intelligent, there would be no wise men—or fools.

All of this to emphasize—"All things are relative."

While the minds of M. E. and F. A. N. stood out shining among the minds of Alpha, no doubt in 10000 years more (in 41000) super minds will cause the intellects of M. E. and F. A. N. to appear as those of driveling idiots. There is no limitation to comprehension and thought. They are vast as time and space.

"We can vanquish these incredible monsters of the dark, F. A. N.," impulsed M. E.

"Yes," replied F. A. N., "our atomic disintegration rays would soon destroy the beasts that invade the light area."

They had already learned that on Alpha there was a great portion (approximately one-half of its surface area) that was constantly in cold darkness. A few mental calculations from the facts the star people possessed showed that the condition was caused because of a permanent eclipse of Alpha's sun on the dark portion of Alpha.

Alpha's sun was very similar to the great sun Earth had possessed, but as Alpha revolved once in every forty hours, some strange intervening planet revolved at incredibly greater speed, its mass coming every revolution between Alpha and its sun. Thus a portion of Alpha was either in night or in the shadow of the obtruding planet.

It was as though Alpha was the hub of a vast wheel with its sun located at edge or periphery of the wheel. And that part way—perhaps midway—a planet dashed at terrifically greater speed around the hub, but on a lesser circumference than Alpha's sun.

At every revolution of Alpha, when its perpetually darkened portion should have been lighted, the interfering planet would regularly intrude its bulk between Alpha and its sun.

For countless ages evolution of life had progressed on Alpha. The side that had normal night and day had struggled from protoplasm to beast—to man. But the darkened portion had gone on infinitely slower and it was infested with astonishing, frightful beasts of stupendous sizes and ravenous ferocity.

The handicap of eternal darkness had greatly retarded evolution in the land of eternal darkness.

What strange, weird beasts roamed without sight in that cold, dark world? The ancient Poe could not have pictured their uncanny horror. For nature had fashioned them in ages to fit their conditions, and nature works strangely, but always efficiently.

At night these beasts would fare forth and devour many Alpha humans. Without sight, their sense of hearing and smell had keenly developed. Towering hundreds of feet in height, their powerful scaly feet and claws could easily tear apart the smaller Alpha dwellings. The mammoth reptiles ventured forth to attack the star people only at night.

Because of this the houses and buildings of Alpha were strong, large and round, so that the claws of the night beasts could find no hold.

Necessity has always governed man's architecture.

Thousands of caves had been built that could be sealed at night for protection. But many times the beasts with the strength and claws of an immense steam shovel had unearthed the unhappy inmates of the caves.

No matter where the people hid, the keen sense of smell possessed by the monsters betrayed the places of refuge.

It seemed to M. E. and F. A. N. that their first task was to rid the land of the beasts.

"Of course in time, F. A. N., when minds can be trained and machinery built, we can change the rotation of Alpha as we did on Earth. Turning the dark area into light for long periods would wipe out the beasts, accustomed as they are to darkness."

"But that will take years," protested F. A. N.

"Of course, my loved one, we must now get lights and ray guns from the space car."

M. E. turned to Jaon and asked in easy tones, "When do the beasts attack, and how many?"

M. E. was now quite proud of his new ability to make speech.

"At each night, Master," said Jaon. "No one knows how many for we lock ourselves in securely. Only those in the strongest, largest buildings are safe."

"Well, my dear Princess, tonight we will surprise them. Now kindly have your brave Heracles escort us to our ships for supplies and weapons."

"Oh, Masters, you will not leave us?" begged Jaon.

"No, Princess, fear not," answered M. E., bewildered for a moment at the beauty and love on Jaon's face. M. E. did not realize that in his emotion he impulsed the thought.

F. A. N., who of course was the only one who knew M. E.'s answer, followed the group, led by Heracles.

There was a strange, perplexed look in F. A. N.'s eyes. She looked almost feminine.

Woman, thou wert ever a jealous goddess!

THAT night was history for the Alpha people. The monsters came. M. E. and F. A. N. had decided to spend the night in the space car, where they had weapons to combat the hideous reptiles.

The Princess, Jaon, and Heracles were so desperately anxious to stay that M. E. and F. A. N. finally consented.

While they waited for darkness they conversed with Jaon and Heracles.

Heracles, they learned, was bodyguard to Jaon, the most desired rank to be had in Alpha. This coveted

position was to be earned only by greatest valor and strength.

Years before, during an attack by the monsters, Jaon had been seized by a great beast. The creature had gorged to repletion, but was carrying the Princess into the land of darkness.

Heracles, the mighty man of strength, had dashed to the shuffling beast, climbed its elongated, scaly neck and twined his arms and legs about it. The terrific struggle that followed was a tradition on Alpha. The mighty sinews of Heracles' arms and legs strained for minutes. Finally the great beast, weighing tons, was slowly throttled to death.

It was the greatest feat of valor ever performed in the history of Alpha. Heracles, therefore, became the personal bodyguard of Jaon. He loved his Princess deeply and reverently. Her person and safety were dearer to him than his life. While he breathed, no harm would come to her.

A strange foursome!

Elemental, primary humans, with primitive desires and passions, mingled with super-humans who had in a great measure become mental and spiritual.

Paradoxically it may read, however, as Jaon and Heracles advanced, so did M. E. and F. A. N. retrograde to human emotions, however slightly.

Environment always influences.

SOON from the distance came the sounds of mighty shuffling and breathing. The beasts were coming!

After a short wait, M. E. turned powerful searchlights towards the sounds.

A great mass of unbelievable beasts or monsters were moving toward the city.

Hundreds of feet they towered above the ground!

"Zeus! F. A. N., prehistoric monsters from the past, except of extremely larger size. How like the prehistoric monsters of earth. Note the larger ones—our ancient Diplodocus and Brontosaurus. Look in front—a replica of our giant Pterodactyl. It is many times vaster in size and it has no webbed wings—no use for wings in the darkness—a mammoth lizard."

"They seem horrible—incredible. Why, they could devour thousands of people," answered F. A. N.

"My poor people, save us, Shining Ones," begged Jaon in fear. "That is the greatest band that has ever attacked us."

The super mind of M. E. was working fast as the creatures slithered ahead with uncanny speed. The sound of their great breathing was now plainly audible. An overpowering stench from their gruesome bodies filled the air.

"The atomic rifle," impulsed M. E.

F. A. N. placed a peculiar weapon in M. E.'s hand at once.

M. E. sighted the weapon and a most terrible catastrophe for the beasts occurred.

The horrible creatures in the lead suddenly fell literally apart as the deadly atomic disintegration rays exploded them. At least 100 were instantly torn apart while many struggled and floundered, mortally wounded.

M. E. lowered the terrible weapon to note its terrific effect.

What followed was a most sickening, revolting sight.

The other beasts fell upon the dead and wounded and began to eagerly devour them.

They could hear plainly the awful crunching of bones and slavering of the blood-crazed beasts.

Jaon and Heracles were astonished beyond words for a moment.

The slaughter of the reptiles was a miracle to them.

Jaon, her heart filled with love for her people, finally gasped.

"Oh, Master, kill them all! You are all powerful! I thank you."

"No, my dear Princess, I shall kill tonight only what the others can eat. It would not do to leave their carcasses there. Thousands of tons of flesh could not be removed quickly and might start an epidemic. Come here, Heracles, I will instruct you to use the atomic gun. You must be careful for you could destroy all the people with it."

"Yes, Shining One, I will take care. The weapon shall never leave my hands," replied Heracles reverently.

"You will have rare sport, Heracles," said M. E., with a humorous grin. "Every night you may kill to your heart's content. I think you will soon be the greatest big game hunter in the universe."

"Beautiful, lovely Princess," breathed Heracles. "Our people are saved."

"Now listen, Princess and Heracles, my good friends. We are not gods; we are just humans as yourselves, only we are a little farther advanced. Don't treat us as gods—we are not," M. E. stated quite firmly. "Treat us the same as you treat your own people."

"Yes, Master," breathed Jaon, drooping her lovely head. "But we love—"

FOR many months M. E. and F. A. N. worked without ceasing.

Imparting a portion of their knowledge to the star people was a prodigious task. Classes of the best minds were formed and daily M. E. and F. A. N. lectured and made records of their knowledge. A vast longing to absorb the precious learning seemed to obsess the people. Sports and recreation were forgotten. Everyone was gathering eagerly precious information.

The problem of repulsing the great beasts of the dark had long since been turned over to the willing, eager Heracles. Not a single beast ever reached the cities. True, several times the gallant Heracles was a trifle over-zealous and it took days to remove and destroy the carcasses of the monsters.

Finally, however, Heracles and his lieutenants came to know to an exact science just how many dead beasts the survivors could eat. The ranks of the great beasts were fast thinning, but the survivors grew in size and ferocity at a tremendous rate. Their now plentiful diet seemed to agree.

Quite by necessity M. E. found it necessary to be with the Princess Jaon a great deal of his time.

After all, he reasoned, her mind was the keenest of any on Alpha, save, of course, F. A. N.'s. It, therefore, was time best spent to instruct Jaon.

Then came a time when F. A. N. went to a distant city to lecture and teach. It seemed best for Heracles to accompany her as guide and protector.

For weeks M. E. and F. A. N. were separated by distance, but of course they could converse by mental projection at their entire will. They both realized it was their supreme obligation to instruct the people of Alpha with all their knowledge. They had no thought of ever dodging or evading this great duty. Both often thought of their marriage, but each time the thought was put aside. Later they could marry, when the major part of their task was done.

One day M. E. sat talking with Jaon. They were for once alone. Jaon had come to realize that M. E. and F. A. N. were truly human, as herself. A deeper, greater realization had come to her than concerned M. E. She had not told M. E., but he knew her fancied secret just the same as if she had spoken it.

F. A. N. knew also, but had not informed M. E. of her knowledge. Strange it was in 22930, Earth man and woman could read the thoughts of others in every-

thing except the love instinct. That is, woman could read the man, but not man the woman.

Wise old nature—or providence, desired for the benefit of the human race that woman should ever be the chooser in love. So woman was gifted with this advantage in matters that concerned the heart.

"My Lord," spoke Jaon, "it is today five years since you landed. What a blessing for my people you and the wonderful F. A. N. have been. My people speak across vast distances—they ride in strange vehicles at the speed of the wind—they no longer fear the beasts—they have comforts and pleasures undreamed of—they have a religion that is practical and reasonable—they are happy—inspired to greater things—they are getting ready to fly in the skies as you have told them—they are learning marvels, with even more to come—luxuries, happiness, education, pleasure, duties, culture, arts, scientific wonders are theirs. It is still hard to believe you are not some god and goddess."

"We have indeed, my fair Jaon, made great progress. But there is a vast amount to be done yet. Machinery must be built which your most skilled engineers can not yet comprehend. We can not yet place terrific forces and energies in their unskilled hands. While Alpha is progressing 1000 times faster than Earth did, it still must follow a certain plan of conservative safety. I see even now that your people must turn to art and pleasure more. They are in danger of becoming too mental. It will be at least 5000 years before Alpha can reach the advancement Earth had attained. Then, too, my dear Jaon, you see F. A. N. and myself have gone back mentally 1000 years already. Some of our finer attainments of mind are now lost to us forever. You see, on earth, with its advanced people and life, we were kept in concert pitch. It is very difficult to tell you what I mean, but it's just this. If we lived long enough, we would eventually be exactly equal mentally."

"I don't understand, my King. I only know a wonderful thing has come to our people—we will become great."

"Please do not call me King, Jaon."

"But you are our King. I am only a nominal Princess. All my subjects—even my faithful Heracles—worship you."

For a time M. E. sat silent. His mind impulsed a message to F. A. N., who was far away in the distance.

"How are you progressing with the lectures, my dear?"

"Splendidly, M. E., I find the minds in Greto to be most receptive. We are making most splendid progress. Really they are a most wonderful people. Think how they have advanced already, 5000 years in learning."

F. A. N.'s reply had come instantly from the great distance.

Woman has always been vested with some instincts that men do not have. Perhaps it is because of her finer, more sensitive structure. Nature intends that she shall always be finer grained and more subtle than man. The beautiful Jaon possessed those instincts in the fullest measure. The more primitive the woman, the more she is engined to cope with man in the battle of sex. Therefore Jaon knew instinctively that her god whom she loved was conversing with his Earth mate.

Jaon marveled at her own temerity—in loving M. E. When a woman really loves—they seldom do—her devotion and sacrifice recognize no limitations.

It would have been impossible for the fair star girl to frown, but a slight gleam of unhappiness shone in her sapphire-like eyes.

"My dear F. A. N.," impulsed M. E., "I am finding it increasingly difficult to project and receive mentally with you. We are both retrograding as fast as Alpha people are advancing. It is the immutable law of nature. You know, F. A. N., if you place a fine-blooded thoroughbred animal into a group of inferior stock, the whole group will slightly benefit. But the single animal will soon revert entirely."

"Yes," agreed F. A. N., "I feel, too, that a very serious situation is arising on Alpha. We are advancing and teaching them too rapidly for their good. At the next conjunction of the three moons I believe we should declare a period of some years' rest. As you well know, M. E., certain anatomical changes must take place in the heads of the Alpha people—changes of tissues and structure that only time can bring. We are overcrowding their brain box capacity."

Then M. E. sent a message that had been on his heart for a long time—

"Then, my lovely F. A. N., we can marry as we planned and rest for a few years, and just live and—"

"My King," interrupted Jaon, suddenly, "tell me more of your Earth customs about the marriage ceremony. It interests me greatly."

F. A. N. wondered why her mental contact with M. E. was so abruptly cut off and M. E. wondered why Jaon should be thinking of matters that pertained to marriage.

But Jaon did not wonder. She was a primitive, natural, vital woman. She was in love.

For the first time in his life M. E. felt uncertain about his emotions. Man has always been a weakling before a wonder woman. M. E. did not realize even in his vast learning that his armor of ages of suppressed emotions and almost spiritual understanding offered no resistance to the warm, corporeal passion of the intensely human Jaon.

TIME flowed on in its relentless stream. Time. What is it? Has it no beginning? No end? The measure of duration—Earth people called it in 1930. The super-people of 22930 called it the yardstick of space, but were frankly puzzled for an exact analysis. True, the billions of planets revolved in certain definite, regular cycles—days—seasons—years—as dancers move in an intricate dance.

A great scientist in 20000 had decided after 200 years of study that time was a form of energy—a mighty mass of worlds, planets and suns—hurtling through space; that a day or a year was just an electron within an atom, within a mass of masses.

M. E. did not know what time was. We shall therefore say that Alpha was somewhat older.

M. E. and F. A. N. issued a proclamation, calling for a two-year period of rest from study. They instructed the people of Alpha in games, exercise and encouraged all the sciences of the beautiful—music—plays—writing—painting.

The two super-people of Earth found, however, that it was no easy task to slack the Alpha peoples' insatiable thirst for the precious knowledge. Finally, however, the people, who obeyed implicitly the slightest wish of their beloved leaders, settled into a more esthetic routine of life. The two earth people found time to consider their own future and happiness.

Jaon and Heracles became the constant companions of M. E. and F. A. N. It seemed as though some strange powerful influence held them together. Their great differences in mental capacity and understanding drew them together rather than repelled. Into that strange foursome a strange love element was born. Love among humans has always been largely instinctive—never controlled by logic or reason.

At this particular time the four were in the great observatory that the greatest minds and engineers of Alpha had completed under the direction of M. E.

The earth people were delighted as they made observations with the powerful telescopes and instruments. Like lightning the two were making intricate calculations and analysis. The involved mathematics they were indulging in were a happy relaxation to their trained minds. For many months they had been teaching elementary things to the Alpha people. It was a mighty relief to let their brains function normally.

M. E. had been working many hours on a prodigious calculation and problem. His bearing and concentration indicated that he was on the verge of an important discovery.

Jaon could not restrain her curious impetuosity.

"What great problem are you considering, my Lord?"

M. E. paused from his calculations and looked at the Princess. "I was thinking of the great new sun that our shattered solar system created. Its light rays should reach us in about three months. Then, my Princess, Alpha will have another sun."

"I don't understand," muttered Heracles, perplexed.

"My good friends, it's this way. You see we traveled much faster in our space car than light does. Of course the new sun faded from our vision as we fairly raced away from its rays of light. But the mammoth sun's light rays are hurtling toward us every second. When they reach here, we will have two suns. If my calculations are right, its light will be about half as powerful as your old sun. Then my friends—"

M. E. suddenly stopped speaking as a fearful, incredulous stare crept into his eyes and his massive forehead wrinkled in concentration.

The others watched amazed. Never before had they seen M. E. perturbed or excited. They waited anxiously —tensely.

"Cosmos!" shouted M. E., leaping to the instruments and charts. He began to work feverishly with F. A. N. close at his side assisting.

The two earth people were apparently deaf to the anxious questions of Jaon and Heracles.

Now, M. E. was communicating mentally with F. A. N., and upon her face also settled an alarmed, worried expression.

Jaon silently went to M. E.'s side, but he paid no heed.

The Earth people had suddenly found a mighty problem—or danger. Soon M. E. stood up from the table of charts. He looked at F. A. N. sadly and projected his thoughts to her.

"Your calculation checks with mine, F. A. N. It is true. Shall we tell them?"

"Yes," answered F. A. N., "for we must prepare for this great danger."

M. E. turned to Jaon and Heracles, who were waiting in fear and wonder.

"Sit down, my good Alpha friends," began the earth man, "I have a startling message for your ears. There is a terrible time coming to Alpha. It may prove a fatal catastrophe, unless we work fast and prepare ourselves."

"What is going to befall us?" burst out Jaon. Heracles instinctively came protectingly closer to Jaon, but he remained stoically silent. A mighty man of sinew and steel nerves, with heart beating strongly and bravely. Danger and peril to him were but casual incidents.

"My dear Princess, it's very strange; I never thought of it before, but this is a great trouble. In two months the light rays from the new sun will reach Alpha and then—"

"Will it burn us?" questioned Jaon fearfully.

"No, Princess, its rays will be cool because of the vast distance they have traveled, but the rays will create a normal night and day period for your now darkened portion of Alpha. Then the entire surface of Alpha will have night and day, as it revolves, except from periodical partial eclipses from your mad planet that now causes perpetual darkness for half of Alpha."

"But, my Lord, will that not be a great blessing, for then our planet will be as your planet you call Earth?" Jaon's face lighted as she spoke. In her intense eagerness she had clasped the hand of M. E.

"It may be a blessing for Alpha in time to come," explained M. E. sadly—"that is, if any of us survive. Don't you see, Jaon, the great beasts of the dark—millions of them—will be suddenly thrown into fearful panic by the light. They will roam over the entire Alpha. Cosmos only knows what incredible scaly reptiles are lurking in that darkness. No doubt, too, there are grotesque human beings in the dark area. Perhaps giants cruel and prodigious. They will be driven by the light every place. They will be ravenous, cruel and ferocious. It will be a titanic struggle. Alpha people—thousands are doomed to perish. But we shall fight and we shall win—"

"Yes, Master," boomed the deep voice of Heracles—"we shall fight. My ray guns will slay them all." As he spoke his great chest swelled and strong sinews and muscles tensed on his magnificent body.

"Be not too sure, Heracles, it will be a fight for years. We can not start an epidemic of disease with millions of pounds of rotting flesh. It is to be a scientific fight."

M. E. suddenly stiffened. "Come, Heracles," he snapped out, "call the councils. We must prepare at once. Plans for places of refuge in the caves—fortresses must be built far from the cities—Ray guns must be made—chemicals to prevent contagion. The rest period is canceled at once. All Alpha must fight bravely—even as the early prehistoric man, with his faintly glimmering intellect, grappled to the death with the ancient monsters. Surely we shall win armed with both intelligence and courage. Our heroic ancestors, handicapped by lack of understanding and armed only with mighty muscles and a club, struggled courageously —and not in vain. They even, in the darkness of their ignorance, strove without fear that the flame of the flickering torch of life be fanned. And it shall be so on Alpha."

THE great task of preparation for defense went on with marvelous speed and efficiency. Only three weeks were left before the monsters would be driven berserk by the light of the new sun. Every preparation that could have been made in the short time allowed was nearly completed.

M. E. stood on a great hill that guarded a great gorge or crack in the ground. He had planned shrewdly a deadly trap to ensnare thousands of the great reptiles in that mighty fissure. The beasts, guided by chemical blood scents that had been prepared, would rush blindly through the great pass. M. E. planned that they would pour like a waterfall into the deep gorge until it was filled with broken, horrible, massive bodies.

Many similar traps were nearly completed. The humans of Alpha would take a heavy toll from the beasts with their opening campaign. But the beasts would soon scatter and from then on it would be a guerilla warfare between man and reptile until one or the other was extinct—totally.

A great feeling of pride came over M. E. as he watched his trained thousands busily preparing for the siege.

His mind raced back through his life on earth—his loved ones. In retrospection he sadly thought of the once happy Earth, with its great accomplishments and advancements.

Jaon, now always at his side and no longer attempting to conceal her great love for M. E., spoke in tender soft tones.

"Of what are you so earnestly thinking, my Lord?"

"My dear Earth and its horrible smashing end. Think of the great learning of ages that was destroyed."

M. E.'s thoughts were for once in his life bitter—bitter indeed. One thinks at times that it is a cruel world—or worlds—in endless struggle for existence. When the original protoplasms slithered from slimy swamps, millions of years ago, they were ferocious and savage. Cannibalistic. It seems that since, all living things have battled with and devoured other living things. All forms of nature seem savage.

Advanced man of 20,000 had come to the philosophic conclusion that the mighty incomprehensible forces of nature and death were a premeditated (not accidental) part of the great Master plan. They were happy in their most logical conclusions and lived for service and accomplishment. Of course they had practically succeeded in controlling the forces of nature to their comfort and advantage.

"Do not worry, my Lord, you will win over the beasts." Jaon hesitated and suddenly spoke out, "I love you, Master, always, always."

Mighty thoughts of the future—the present—and the past were coursing through M. E.'s mind. He ignored Jaon's sentimental outburst—at least openly. His mind seemed clear of a great sorrow when he spoke. "Jaon, dear," he began quite tenderly, "I must not grieve at the loss of Earth and the other planets we knew so well. I will not mourn, for it was as the great Master of the universe wished. We were just an infinitesimal part of His great plan."

"How could it be with such a catastrophe?" asked Jaon—"Noble races exterminated."

"I see it all clearly now, Jaon, my dear. It was just a part of the Great Plan. Many great scientists feared the catastrophe for years. It was a natural movement of nature—or the universe—to adjust things."

"I can not understand," stated Jaon, simply, as she drew closer to M. E. "Please explain."

"My fair Princess, I will try to make it clear to you. For generations scientists on Earth knew that the fundamental bricks of the physical universe—atoms and electrons—are constantly being created in space. There is a countless sky-space family of these important atoms and electrons born incessantly from aluminum, magnesium and allied substances—all fathered—or mothered—by the cosmic ray bands. Earth people had found that all substances are created, atom by atom—electron by electron—in the great vacuous void of space."

"I guess I understand," faltered the fair, lovely Alpha woman. "It is very wonderful."

"Then," continued M. E., "we found that the sun—or rather our old sun—had a most terrific temperature. Its surface was over 6000 degrees centigrade or 10,000 degrees Fahrenheit. Terrific as that may seem, yet it was found that the sun's center was 72,000,000 degrees Fahrenheit, with a corresponding, terrible pressure.

"The great scientists of Earth discovered that, owing to the horrible heat of the sun, atoms of matter were constantly exploding in that fiery gaseous furnace. In other words, the nucleus or positive charges of the atoms were disintegrated or exploded by the great heat and pressure.

"This created heat and light, but the sun—vast though it was—always needed fresh atoms and electrons for its fiery furnace. It could not continue forever to keep itself luminous and hot by that sort of self-consumption. Scientists made the startling discovery that each second the sun threw off into space a material mass of about four million tons. Such a drain depleted even that mighty orb. The atom-annihilation of the sun exceeded its absorption of newly created atoms.

"So the Great Master of the Universe, who has billions of Suns and countless billions of worlds to watch, simply created a vast new sun—a sun that will no doubt survive many billions of years and serve countless planets with radiant energy, heat and light.

"But, my Lord, the great sacrifice of life," protested the human Jaon.

"Life and death are but incidents in the vast Great Plan, my fair Jaon. I am sure the life of each person on the worlds destroyed meant a great benefit to millions of lives on other worlds. We of Earth learned not to fear death. It is but a step forward to something finer—better."

"Your belief, which is now mine and that of my people, is wonderful. To think that my poor people worshiped our Sun before you and glorious F. A. N. came to us," said Jaon, in awed tones.

"That, Jaon, was perfectly natural—for the sun protected you from the beasts of the darkness. Unenlightened humans on all planets have always worshiped that material thing which most benefited them. So, Princess, we must do our best always—live—advance—and love."

"Yes, my Lord, we must—love."

IT was a week before the light rays of the Universe's new sun would reach Alpha. Then the fearful, excited monsters would ravage the land. It was to be a fearful struggle of humans against the beasts. Monsters, because of the queer intervention of the sun's rays by the mad planet, were millions of years behind in evolution. Prehistoric beasts, and no doubt titantic creatures that might slightly resemble humans, would rush over Alpha.

All the people had been informed of the long desperate fight to come. They were a courageous, hardy race and were ready to do their very best—bravely.

By seeming instinct M. E. and F. A. N. had met in the magnificent, glittering throne room in the Palace of Jaon.

For weeks a great vital question had been in their minds—and hearts. A great certain fear and doubt were now ever present with them. It concerned their marriage that had been planned on the Earth they had loved so dearly.

F. A. N. had received an impulse from M. E. to meet her in the throne room for an important conference. A crisis was at hand that concerned their love and marriage plans.

The two super-people sat gazing at each other as if stunned by the magnitude of their great dilemma. Each waited for the other to speak. Ordinary problems of life to them were easy of solution by reason of their vast learning. But the two were now confronted with the strangest sex problem that man and woman had ever imagined or dreamed.

With a look of infinite worry on his face M. E. began slowly to speak.

"It is inconceivable that we did not think of the matter before, my dear F. A. N. It is a tragedy!"

"Are you quite sure that you are right in your idea? We were selected by the Board of Earth Eugenics to marry. And I have planned always to be your mate." F. A. N.'s intelligent eyes seemed to reflect the sadness in the other's face.

Both were speaking in Alpha language—not by thoughts. Under the mental stress of their trouble, they used language and spoke slowly and deliberately.

"We cannot marry," finally stated M. E., firmly. "You know, F. A. N., it is very possible that here on Alpha we could not produce offspring. Much as we love, it is our duty to mix our blood with the Alpha people.

"For centuries on Earth childbirth was accomplished with the aid of the great ectogenetic laboratories. The wonderful chemical process produced only the finest of children. It will be many centuries before Alpha is advanced to the degree that ectogenesis can be accomplished. If we marry and have no issue, it would not be well for the future of Alpha."

"Perhaps, M. E., my lover, I, the last woman of Earth, have not lost the power to produce child as woman did in prehistoric days."

F. A. N. spoke without embarrassment, for people of 22930 were not in the slightest prudish. They knew in their wisdom that sex was a most important, vital subject, for it concerned life itself.

Prudity is fatuous ignorance.

"We cannot take that risk, for the many years of ectogenetics have perhaps taken some reproduction faculties from both of us. You must marry Heracles. Perhaps with his primitive, natural vigor you may function in childbirth as women did in the olden days. But, F. A. N., it is a fearful risk for you to take in any event."

"I am ready, M. E. Did not the Supreme Council bid us 'Start the human race anew'?"

"Duty points out clearly our only path. We must mix our blood with the finest Alpha couple," came from M. E. in final tones.

"You mean, M. E., that you will marry Jaon?" asked F. A. N., once again looking intensely feminine. "You love her?"

"I don't know, I confess," replied M. E. frankly. "She is such a glorious human creature. She has awakened strange emotions in my heart that I cannot define."

It seemed to F. A. N. that a great icy hand had closed tightly over her heart. She realized full well that the honest M. E. was in deep love with Jaon. It was well for the future of humans that M. E. could not divine the thoughts of the Earth woman in matters of love. She bent her head in thought. Man—always stupid in love—waited perplexed.

Woman has always borne the keenest suffering in the entire history of humanity. She goes down into the dark, mysterious valley that life may be sustained.

Back of every great man's life there has been some glorious woman who sacrificed everything for him.

Such wonderful women—the salt of the earth—are very few. Most women regard marriage or an alliance with a man as merely an exchange of her desirability for food and protection.

But these latter are exceptions to the general rule.

IT is well for humanity that women do not (as a general rule) possess the sex impulse—or desire—that is vested in man. If the torrid passion that beats so madly in man's blood were present in all women, the human race would soon be a lascivious, salacious, vicious people. Woman is the safety valve.

F. A. N. looked up with sad, grief-stricken eyes. Woman's eyes are:

"The books, the academies—from whence spring the true Promethean fire."

The noble Earth woman had decided. With a soul torn with anguish she made, for humanity and M. E., a supreme sacrifice. Even as great women have always done.

"M. E.," she said softly, "it is best for Alpha that you mate with the fair Jaon. You two are in love and there would be no doubt as to issue. That is most important."

"But, my lovely Earth woman," stammered the startled man, "will you be happy?"

F. A. N. knew that honor and obligation were part of M. E.'s very existence. Countless forefathers of fine honest people and the rigorous rules of life that had been adopted by advanced humans made it impossible for him to do anything dishonorable—even in love matters. She knew that M. E. would not be happy if she was not pleased. Her man must be made satisfied, so she made the sacrifice supreme—with a noble falsehood.

Many years later great statues arose to commemorate the wonderful M. E. and F. A. N., who made Alpha such an incredible visit.

The two were worshiped for all time to come. Memory and history revered their names. For, because of them Alpha had advanced in knowledge and achievement, health and happiness thousands of years. But no one ever knew how F. A. N. had torn apart her very heart for humanity.

"I will be happy, M. E.," smiled the great, fine woman, with streaming eyes, "for I—I—love Heracles."

M. E. took the girl in his arms with affection, gratitude and happiness.

At that dramatic moment Jaon and Heracles entered.

"Tell them, M. E.," impulsed F. A. N.

With slow, measured words M. E. began.

"Jaon and Heracles, we think it best that we four marry at once. The long years of combat with the beasts are ahead. For Alpha we four must wed at once." M. E. looked a king as he spoke—but a silent, sad woman held the fate of the world in her soft hands.

Jaon looked utterly crushed.

"You mean, Master, that I am to wed Heracles?" She sighed and continued resignedly—"I am ready to do your bidding."

Heracles, who worshiped one woman as his Princess—and the other as a woman—stood silent. The word of his adored M. E. was law. A soldier never questions.

M. E. took Jaon by her hands and drew her close.

"No, my dear Princess. F. A. N. and Heracles are to wed. And you, Jaon, lovely one, are to wed with me—at once."

With a happy incredulous cry Jaon buried her head against the breast of M. E., who looked strangely happy.

Heracles simply took the hand of F. A. N. and pledged his valor and heart.

Thus did a true, noble woman sacrifice her all, that three people might be made happy—that the chances of human existence be made more secure—but most important to her—that the man she loved might be made contented.

All of which was proper.

THE END

Bright flashes were occurring between our fleet and the screen, and also behind it, where the enemy globes were speeding . . . Suddenly there was a terrible flash of light, and the whole of space seemed rent by a colossal tempest of raging fire.

The War of the Universe

By Clinton Constantinescu

Illustrated by MOREY

NUMEROUS theories have been offered to explain the reason for the occasional masses that come out of space and imbed themselves in our earth. These masses our scientists call meteorites but they cannot tell with any degree of certainty where they come from or why they fall to our earth. Some day, perhaps, when we get jolted out of our smug complacency and superior feeling and learn that there is intelligent life on one or more of our sister planets, we may learn the purpose of these foreign invasions from the sky. We may learn, also, that these falling meteorites are not always so harmless, as witness what happens in this absorbing story by another new author.

CHAPTER I

First Signs of Trouble

IT was the year 1992 when the premonition that an incalculable disaster would strike its fangs into some member of the universe caused much concern in our solar system. There had not been a disruption since the time when our sun had attracted and destroyed the invading comet Phoenix*, and that was 1,428 centurices ago**. There had been no disturbance created until just lately, when there was a forced collision of meteorites and suns in the direction of the constellation Cassiopeia. So our solar system was beginning to feel uneasy.

It happened that I was one of the many very anxious observers on the Earth. My name is Dr. Charles Ferrum, and for the past two years I had been director of the Astronomical & Scientific Research Institute of North America. I had much to do, and when great care and accuracy were necessary, I was always called. I was very young (twenty-five) to be at the head of such an institute, but I had always been an exceptional lover of science, and had striven hard.

On this particular day, June 20, Luke Solar, my chief assistant astronomer, called me into the observation room.

"Charles," he said, "either the telescope is fooling me, or I can't believe my eyes! Just take a look in and see what's going on. It's all set." Luke was all agog with excitement.

I climbed into the seat and pushed my eye up to one of the eyepieces. The telescope was one of the greatest on Earth, having a reflecting mirror of 1,800 inches diameter, and an electro-magnification power of over 40,000,000 diameters. The giant barrel was 800 feet long, and the whole swung on a revolving platform. Various other instruments were also attached for recording measurements and so forth. An arrangement was also made for electric photographs to be taken.

As I looked in, I saw where a very small spiral nebula was slowly uncoiling, and a little to one side was a small sun approaching. The action seemed unnatural, as though directed by some other unseen force. The nebula appeared to be in an attitude of defense, but within half an hour it had again coiled up, and was vanishing behind a dense star cloud. The small sun likewise vanished suddenly, and I saw no more of either.

"Well, what do you think of it?" muttered Luke, who had been watching through a second eyepiece.

"Hmp!" I laughed. "Looks like trouble, but you can't tell yet. We'll have to wait and see."

With that I went out and attended to some other work. But the thought kept brewing in me. A Universal War! A Universal War! Could it be so? I did a little careful thinking on the matter, but finally concluded that what I saw was only a little change or disturbance among some of the remote stars.

A few months after this, I was working on one of my ray projectors, and on turning on the current, I found to my surprise a core of reddish light surrounding the inner terminals. Only a pale green ray should have come from the vibrating crystal. This new shaft of red light meant interference from other rays. So I brought out my rayograph, and found that a new, mysterious and invisible ray was coming from a distant star. This new ray had a frequency unlike that of any of our ordinary rays, and traveled with a speed incomparable to the velocity of ordinary light. For several days my projector was seriously interrupted by this mysterious ray. On the sixth day it had vanished, and I was again able to use my instrument.

A week later another ray of paralyzing power shot down upon the Earth and burned out a whole set of dynamos, not 200 miles from us. This time the rays were originating from a peculiarly blazing comet, which

*According to early Martian records of the stellar attack which was soon doomed to failure.

**A centurix is 100,000 years.

chanced to dart into the region of our solar system. The head of the comet was almost gone, but the blazing remnants were still shooting out rays. Fortunately for us, the menacer did not remain active for very long. It whirled around the sun a trifle too close, and was drawn in at a terrific speed. That was the finish of that comet.

"This is beginning to look serious," said Luke to me one day. "I wonder what's to happen next. Looks as if it means war. We'll have to be doing something soon!"

"Quite right, Luke, quite right. That comet must have been blasted to our solar system from some star in the distance. Observations and calculations prove that it could not have come any other way."

Luke lowered his head in deep thought. A few more moments of silence followed and then:

"I wonder what the Martians think of it!" I broke in. "Perhaps we had better——"

"They sent us a radio call last night, saying that one of their ultra-cosmic ray projectors was short-circuited, and an atomic apparatus was burned."

"Oh, did they? I think I'll go off and see what they're doing about it. Want to come along?"

"Sure I'll go," answered Luke.

"We'll get ready tonight, and—er—oh yes! we'll have to take some new fuses for the engine. How much have you left to do?"

"Only this meter to check up on."

"Oh, never mind that. It can go. Get some new fuses while I look the engine over, Luke."

He left.

I went out and into a large hangar where was kept my space rocket flyer. I made some adjustments on the engine, and when Luke came a little later, I put 6 new atomic fuses in the atomic switchboard.

The space flyer was the machine used in traveling from the Earth to the other neighboring planets of our solar system. It was like a cylindrical projectile, with a rubber shock repellor at its head. The cylindrical wall was made of two layers of elastic glass separated from each other by a vacuum, the total being about one foot thick. The outside diameter of the machine was 25 feet, the entire length being about 100 feet. The body was equipped with a set of two landing wheels and also a gravity balancer which caused the machine to land properly. A pair of collapsible folding wings completed the outer fixtures.

Two vacuum doors were attached, one on each side at about the middle. In the inside there were two main compartments, a front part where we stayed, and the engine room at the rear. The machinery consisted of an atomic propulsion engine which furnished the main reaction force for the flyer. A row of four niton batteries supplied the necessary energy for operating the atomic engine which was charged with 16 ounces of atomic powder. Near these was the atomic repulsion tube, and also a repulsion disc which caused a nullification of gravity and a retardation, when a landing was desired. On each side were the regulators and instruments for directing the projectile's course. Most important of all was the switchboard which controlled every movement of the apparatus, and which was just between the two compartments.

In the forepart of the projectile were small compartments in which to sit. Near the head, set in at each side, were two periscopical, electrical telescopes for observation ahead. An electric camera was situated on one side. A small box containing charts, books, paper and pencils along with other trivial things was to be found on the other side, near a similar box of concentrated food and emergencies. Small tubes of solid air, electrically operated, were spaced about the inner wall, and a special exit valve for the escape of CO_2 was set in at the ceiling. There was enough food and air to last two men fifty days.

Such was the space machine that enabled us to travel from our Earth to the neighboring planets. It was in this machine that Luke and I had taken many a trip to Mars and Venus, and now we were to employ it for another journey.

CHAPTER II

Further Indications of Strife

LUKE and I were up the next morning, September 5, close to 3 a.m. After a light breakfast, we went out into the landing field and prepared for our little trip. We wheeled out the projectile, opened the hermetical glass doors, climbed in, and closed them after us. After settling comfortably near the switchboard, I pressed the button to automatically unfold and outstretch the wings. Then I carefully turned on the atomic power. Slowly and softly the machine glided off the field, and arose into the air like an ordinary plane. Then the speed increased. Four minutes later, when we had attained a velocity of 300 miles per hour, at a height of 6 miles, I steered almost vertically upwards, and pressed a button which immediately folded the automatic wings. I then turned the power on almost fully, and 12 minutes after our departure from the Earth, we had attained the remarkable speed of 16,000,000 miles per hour! By means of the proper propellant charges, we steered towards Mars, allowing for its change in position along its orbit.

From time to time we looked through our telescopes, or viewed the surroundings. The landscape, or rather, I should say, the stellarscape was interesting. Due to the absence of an outer atmosphere, the heavens appeared like a huge, black, endless and unfathomable space, with a great, dazzling white ball of fire, and riddled with stars that never twinkled. Poor old Mother Earth seemed but a small distant sphere receding further away and assuming a star-like shape. The moon was a smaller speck near the Earth. The sun's corona —that mysterious mantle of blazing, incandescent hydrogen, helium and other gases—appeared in all its gorgeous beauty. Even our machine, reflecting the solar rays, shone about us with a pale hue.

Perhaps equally interesting were the giant, fiery meteors and meteorites, which flashed about intermittently. Those which came too near our machine were repelled with tremendous force. On our way we met a comet heading towards the Earth. And what a sight—a great ball of flaming fire with a vast luminous tail behind! We feared it might impede our path, for we calculated its velocity to be almost as great as ours. However, it passed close by without hindering us. A few moments later, we were surprised to see a ray of fire dart forth with incredible speed from the direction of Mars, and burn the comet into a vanishing spectre. The Martians must have decided that it was sent from a hostile star.

After a three-hour run, we sighted a red planet increasing tremendously in size. We steered a little straighter, and soon slackened our high speed. When we came within a few hundred thousand miles, we switched on our repulsion disc and retard tubes. Our speed decreased rapidly, and fell to several thousand miles per hour when we were not more than 500 miles from the ruddy surface. I spread out the wings, and in a short time we came rapidly gliding through the Martian atmosphere. After circling several times, we finally landed softly on a level landing field.

Turning off the engine, we got out of the rocket machine. The first thing we noticed was that, although

the ground was quite warm, the air was chilly. The atmosphere was slightly rarefied, and so, probably, the sun's rays, passing through a thin atmosphere, warmed the ground, but upon being reflected upward, were absorbed only partially and thus gave little heat to the air. As the sun shone very brightly, we had a pleasant view before us. Here and there were large red fields with strips of brown grass and vegetation, and between were small green marshes. Further on lay great parallel stretches of cultivated trees, orchards and forests. Among these trickled small streams which nourished the surrounding growth.

In a few moments a soft purr was heard and a small atomic transport plane alighted near us. Out came a tall, thin man whom I knew at once to be the President of the Martian Ether Force. He welcomed us heartily. I explained to him our reason for coming here, and he nodded solemnly.

"It's the same here," he said. "Last week a whole set of atomiscopes were detonated. And our cosmic ray projector went on the blink," he added.

As we stepped into his plane and flew off, he explained more about the situation.

"There must be some great disturbances over there in some of the suns of Cassiopeia. The trouble is coming from that direction. Would you believe it," he added, after a pause, "we've been keeping our dynamic rays going for the last month? Why, it's becoming dangerous! This is the only way to turn those meteorites into atoms."

We had now landed in a small bare spot in front of a great metal structure of probably 800 stories high. On the front, in large letters, was engraved "Headquarters, The Martian Ether Force." The giant skyscraper had a frontage, I estimated, of fully 1000 feet. All along in front was wide smooth pavement which met our feet with a curious rebound. In the middle was the entrance, a large flight of dull, concrete stairs some 20 feet broad, 10 feet on the slope, and leading to two massive metal folding doors 5 feet wide by 10 feet high. As we walked up the steps I noticed through the glass doors that our shadows were planted on a small disc situated behind and attached to the left door. The doors immediately slid open to admit us. In we went.

I was quite familiar with this building, having entered it many times previously. Branching from the entrance was one large main hall with subsidiary halls at right angles to it, and extending on either side. Near the front three automatons were operating radio typewriters. Further on we came upon a group of these mannikins operating atomic dynamos. Here and there were machine rooms and offices. The greatest room, the engine room, was situated at the rear. Here was the life of the whole building.

Dr. Martin, the president, pressed a small button in the wall. Immediately a slide door opened and we stepped into the elevator. The keeper, an automaton, saluted, and closed the door. The elevator shot us up to the 790th story, and in half a minute we were on the highest floor! Dr. Martin conducted us into his office and observatory room where were kept the telescopes, atomiscopes, ray projectors, and numerous other highly complicated instruments. The dynamic rays were shining brightly, and were directed through the opening in the ceiling. A revolving platform kept the rays surveying the sky at an incline of 60 degrees from the horizontal.

As we stood watching the rays, Dr. Martin explained their actions.

"Any enemy ray that crosses these is instantly deflected into this crystal mirror," he said. And, sure enough, we hadn't noticed, there was a concave crystalline mirror below the projection lens.

"There you are," he caught my hand, "that's interference right there now! See the mirror shine up with a blue streak?"

"By Jove, I do!" I exclaimed. "My, but it does seem as if something is bound to happen shortly—probably a universal war!"

"No, it certainly isn't a mere trifle. The discharge of meteorites has recently been fearful. Rifton reported that the forests near Ventricee had been seared by an unknown ray, and his Venerians had much trouble in checking the serious blaze. Jupiter has captured over five comets since last month. The chief scientists are holding a meeting here tonight, and every planet will be represented. It is an urgent meeting for discussing what plans our solar system proposes to adopt. You must stay."

CHAPTER III

The Decision

AT seven o'clock that evening (Martian Tri-federal time), a banquet was given, and the greatest scientists of each planet were present. In appearance they all closely resembled one another. The Martians were slightly taller than the Earth men, and the Jovians and Saturnians were heavily built men, about eight feet high, and equipped with powerful limbs to withstand the enormous gravitational power experienced on their respective worlds. The men of Uranus and Venus were of normal size, while the Neptunians and Mercurians were somewhat smaller. Forty of us were present at the banquet and meeting. The planetary, solar dialect was used.

The dinner finished, and the tables cleared, Dr. Martin, the chairman, opened the meeting:

"Gentlemen: I presume you are all aware of the purpose of the assembly here tonight. You have all noticed the unusual events of late, the threats of another planetary system in Cassiopeia. Our whole existence is dangerously threatened, and something must be decided upon at once. If the present conditions keep up without our mobilizing at once, we shall probably be destroyed inside of the next few months!

"Tonight, we have been brought together to discuss these problems which have unexpectedly confronted us. We must consider our situation very carefully, and determine the best measures to adopt immediately. In any event, we must form a defensive alliance, and we may also have to attack our aggressors. The problem is serious, very serious, and everyone of you is asked to aid in its solution."

With this, Dr. Martin resumed his seat, and fingered some leaflets lying before him. A few of the scientists conversed in low undertones, while others sat thinking. Finally someone ventured to speak.

"Gentlemen, may I have your attention a few moments, please?" rang out the voice of Spencer Rifton, chief of the Venus Scientific Corporation of Ventricee.

"We must consider the mode of defense against these far-off aggressors. We have already seen, that for the most part, the attacks have been made with powerful rays, some known, others unknown to us. We must develop apparatus and instruments to repel these strange rays or destroy them. Then perhaps we can produce other rays that will wreak havoc amongst those distant people, or creatures, or whatever they are."

"Quite correct, Rifton, quite correct," asserted Dr. Martin. "That is the main danger, those rays. We must classify fully the unknown rays, and invent contrivances with which to destroy them."

"Pardon, sir, but our department has already classified each ray, and we have found these rays to have, in

most cases, an enormous frequency, far higher than any of those we have ever produced before. And I have duplicated some of these rays by reducing the atoms of ultrathorium* metal with the electric arc and cosmic** ray combined. These new rays I have called ultrathoric. They are invisible, and disintegrate almost everything except selenium and tellurium, lead, the alkalies, and a few other rare metals. They can pass through 57 meters of lead, 2.5 meters of osmium, and 4 centimeters of selenium. Tellurium seems to hold them back the best, for 3 centimeters of it will stop the rays. These rays along with the other kinds can be reduced to the orange spectrum rays by passing them through an electric krypton glow tube coated with a thin layer of radium potassium perchlorate and neodymium oxide.† The tubes are cylindrical, 10 cm. long by 4 cm. in diameter, but they may be made in any shape. Rows of these tubes, each tube spaced at 20 cm. intervals, are sufficient to collect the enemy rays and transform them into the harmless type.

"These tubes have just been made, and have been a decided success. I plan to equip all our electrical machinery with these bulbs, and I am sure they will protect your own ray machines if installed in a similar fashion."

The speaker, Bert Arakort of Saturn, smiled as he sat down, and a score of whispers arose.

"We are certainly very pleased to hear about this recent discovery of yours," replied Dr. Martin, "and we shall put it into force immediately. How soon can you supply us?"

"We can make over 20,000 per hour. I have just devised a set of machines for manufacturing them in large numbers."

"Good! We shall find out tomorrow morning how many and what shapes we will need."

I wondered what could be done concerning the large meteorites that were being continually directed towards our system.

"Concerning the meteorites:" I addressed the scientists. "These masses, we have noted, are coming from the one direction in parallel formation, and strike everywhere. We must repel them. I suggest that more time be concentrated on the properties of gravitation and attraction. If we can use the property of electromagnetics as applied to gravity, then perhaps the present method of repulsion may be enormously increased. Oncoming meteorites could then be stopped short by repulsion, guided to waste areas, and attracted again to the surface. In this way they would do no damage, and yet we would still be obtaining valuable materials from them. I am working on the problem now."

Dr. Martin nodded.

"An excellent idea, Dr. Ferrum. By all means, try to develop the method. We shall aid you in every way we can."

"Dr. Martin, we are able to defend ourselves from the present attack, but do you not think that those fellows may outwit us with some entirely new means of destruction?" asked Randal Jovrite, the husky Jupiterian. "I believe that we shall have to go out and fight them to a finish. That is the only way to be certain of safety. If we can destroy them, we shall not be bothered further with their attacks."

"Do you mean to send a fighting force?" queried Martin.

"I do! More than that, a real, genuine fleet of space destroyers."

"The trouble seems to originate from the planetary system of the binary star Eta Cassiopeiae, and that is about nine light years from our system. Rather far, don't you think?" put in Rifton.

"It is far, no doubt," replied Jovrite, "but I'll guarantee that we can reach there in less than nine years. In fact, less than one year!"

"??? . . ." came the chorus.

"How? Let me explain. My idea is to build an enormous fleet of huge space ships, each equipped with the most modern instruments of planetary warfare. These ships shall be propelled by the atomic principle, which is so well known to us all. We shall use this power for starting. One hundred thousand ships will be sufficient, I am sure. They shall line up behind a pilot ship. When this leader has arisen, the other machines will follow, and form three distinct companies, one behind the pilot, and one on each side. When we have acquired as high a velocity as possible, the order will be given to switch on the alkali ray, a new ray that will be generated within each ship, and which has the remarkable power of drawing the monster along its path at the speed at which the ray travels. Experiments prove that the alkali ray can easily overtake light. In fact, its speed so far has been reckoned as L-45, i.e., 45 times the velocity of light. Each ship will have its own generator, with enough power to generate the ray for over two years. Thus our craft can develop velocities hitherto unknown. The speed may be decreased by adjusting the feed mechanism of the ray.

"Each ship can now be protected from enemy rays by distributing Bert Arakort's tubes throughout the inner walls of the projectiles. Inside, the mechanism will be similar to that of our own present space machines. At the top front part, a small instrument capable of producing constantly a powerful anti-magnetic field will be useful in repelling large meteorites and comets. A second instrument will generate a ray that will disintegrate to atoms any stubborn comet or meteorite, but which will not harm our own machines or men. A third contrivance at the fore will send out a shaft of light that will travel only a limited distance before us, depending upon the adjustment of the operating dials. On reaching its limit, say ten million miles or so, it will spread out at right angles, and then return to its origin. Thus any object far out in our path will be lighted. This ray has a velocity far greater than that of our own machines, or even of the alkali ray. Food and supplies to last the crew five years will be stored.

"The outside of each projectile will be treated with Radium Enamel No. C-142, to render them visible in the outer darkness. Each machine will have to follow the exact orders from the pilot ship to ensure safety. Training and discipline of the crew is of utmost importance. A slight mistake would mean the annihilation of all. Of course we might be able to install a master switchboard in the pilot ship to control all the movements of the other machines of the fleet. When we arrive near enough to the distant system, we shall bombard the planetary system of Eta, probably with captured comets and meteorites, which may be projected by a system of rays and magnetic waves I have been trying to develop. In extreme cases, we may be able to change some of those planets into the fourth dimension by means of my quadramometer, which works on the electro-magnetic principle. Other instruments of destruction will also be used."

Every face bore an amazed look as the speaker concluded. We were all plunged in deep thought for a few minutes. Finally someone broke the silence with a question.

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* Ultrathorium, atomic weight 464.3, Valence 6, was discovered by Henryson in 1987. So named an account of its relation to thorium.

** Known also as the Millikan Ray; discovered by Dr. R. Millikan on Nov. 9, 1925.

† The Radium Potassium Perchlorate here is the complex salt of the formula $RaK(ClO_4)_6$, crystallizing from aqueous solution in hexagonal prisms of pale violet blue. The highest oxide of neodymium, Nd_4O_7 is the one employed to probably excite the radioactive compound used.

"How can a ray be used to draw a space ship along its path?"

"We are employing the electro-magnetic principles of matter and light," replied Jovrite. "You will remember that as remote as 1864 Maxwell of the Earth proved the correlation of light and electro-magnetism, and somewhere during 1929, the great Professor Albert Einstein formulated his theories that gravity and light were electro-magnetic phenomena. (These discoveries on the Earth are somewhat recent, compared to those of the Martians who have solved these problems over a million years ago.) This ray we will use has similar properties. Have I cleared the difficulty?"

The questioner nodded assent.

"When and where will you have these machines ready?" asked Dr. Martin.

"I have the blueprints all made, excepting for a few minor details here and there. By concentrating all our factory men on the work, I can have one hundred thousand ships completely equipped inside of two months. Rigid training and several practices will take another month. By the end of three months we shall be ready. We would start from Jupiter."

Dr. Martin thought for a few moments, then addressed the others:

"Scientists of our solar system! You have listened to Randal Jovrite's excellent plan, a plan which must prove successful. We can defend ourselves against the attacks for another three months until this space fleet is ready for action. Has anyone any criticism to voice against this plan?"

Silence——.

"Those in favor, hands up?"

From every seat a hand shot up.

"Contrary?"

None!

"Scientists of our system, I am greatly pleased to know that you have decided upon the wisest plan yet adopted, and I sincerely hope and trust that it will succeed. Let us thank and cheer Professor Jovrite for his marvelous plan!"

Chorus: "Hurrah—hurrah—hurrah!"

CHAPTER IV

Our System Organizes

THE day after our decision, the scientists departed to their different tasks. I came back immediately to Earth, for I, too, had my share of the new work. I spent long and tedious hours in my laboratory, improving upon our instruments, and striving to build newer ones. I also spent some time at my telescope, and by employing a new kind of more powerful coils along with a higher current, I was able to increase enormously the electro-magnification.

I now saw what I had suspected. The whole planetary system of binary Eta had combined in the common attack. Here and there huge machines were crawling back and forth across the colored landscapes. Here and there small space machines of circular, spherical appearance flitted slowly between the respective planets. I could not notice the creatures, but they had evidently evolved an advanced type of civilization not unlike our own.

There were fourteen planets, five of which traveled in a retrograde direction. Most of these worlds had satellites. Two of the planets had ring systems similar to those of our Saturn. I could not determine the character of the soil because it was lighted blue and rose by the binary sun. The soil might have been of some spectral hue itself, but the surface displayed a light purplish red tint, with darker patches all about.

I radioed the other planets of my discovery, giving full details and accurate description. Just as I had done this, the building shook violently, and a terrible blast struck my ears. The air suddenly became stifling. Rushing out, I saw a large smoking gash a few miles away on a hill slope. A number of men were cautiously approaching the giant, fallen meteorite, and I hastily joined them. As we neared the buried monster, bright flashes of flame tinged with dark red and purple caught my eye, and upon examining these colors through my pocket spectroscope, I saw the well known lines of rubidium and eonium.* Here were two alkalis, hitherto quite scarce, but now quite plentiful.

The meteorite proved to be of enormous size, and I realized that if it had struck the city, everything would have been blotted out. The mass was still at a very high temperature, but within a week it had cooled sufficiently to permit excavation and the removal of the material, part by part, to our large research stock building. A few days later everything had been removed, and was ready for the analysis and extraction of the alkalis and other metals.

The next week I had invented the device for repelling giant meteorites by means of rays and directing them, while still some miles high, to waste areas. A fortnight later I had brought the machine to a high state of perfection. By means of an extension to the device, we directed 6000 lbs. of rubidium oxide and 30 lbs. of radium sulfate, in containers strapped together, to the Space Fleet Corporation at Calaphrite, Jupiter, where these materials were badly needed. The bulk of our rare elements were now being obtained from fallen meteorites, which contained these in unusually large proportions, and which continued to come without harming us. The rest of our planets were also benefiting, since we had broadcast my invention to all of them.

Now and then I took trips to Mars and Jupiter. The Martian cities were very busy, too. In fact, Dr. Martin and his staff had invented and perfected many devices. One of their many contrivances was his new space suit, a decided improvement over the old suit of 1945, which never was a success, and which was used for deep sea divers' work. Within the flexible, double walled "rubber glass" of this new suit, one was safe from the outer perils of space, while every part responded to the wearer's movements. Even the thick fingers could easily be manipulated for grasping small objects. A quantity of solid air in an outer compartment was provided to last a person five or six hours, the CO_2 being removed with ample sodium hydroxite (NaOH). A special atomic power box was installed to propel the suit and wearer in any direction and to retard the speed when desired. A radio communication service completed the equipment.

These space suits were of great value in exploring uninhabitable satellites such as our Earth moon. Space ships could land on our moon, send out mineralogists, and thereby obtain many valuable minerals that were unknown on some of the planets. A great number of these suits were distributed among our solar members.

On Venus there was no lagging. Everyone was busy in the factories. At Ventricee and Tornilere, vast mineral mines were in full operation, while the scientists at Venoria were perfecting new types of concentrated food and medicines. The cities on Mercury were wrestling with almost the same kind of problems. Uranus and Neptune were also concentrating on new minerals and ray machines. Meteorites proved a veritable treasure in the field of rare metals.

The Saturnians were manufacturing the ray-proof krypton tubes by the millions. Bert Arakort had all his

* Eonium, atomic weight 371.5. Valance I, III, and IV, is one of the alkali metals, first discovered and prepared by Stafford, 1973.

men on the job, and within one month every planet was well supplied with these tubes. Over twenty-six million had been distributed. Aside from these, a number of other ray insulator tubes and shaft projectors had been perfected, and were now being manufactured in wholesale quantities.

Another clever Saturnian device was the sunlight storer, a complex set of high frequency coils and generators connected with a number of large glass condensers. Near one side was a huge concave mirror dotted with an immense number of fine wires, the concave surface facing upwards.

This was the sunlight collector.

The myriads of wires and their photo-electric cells led the light corpuscles into the intensifying coils and condensers, where the photons were changed into potential energy, and stored. In the evening, when the sun was below the horizon, this potential energy was transformed back into light rays that were then reflected upward from a second mirror, this time convex. A magnetic arc coil served to stop the rays of light when they were five miles high, and almost totally refract them so that they came downwards again.

Thus an area as large as 50 miles in diameter could be wonderfully illuminated all night by the use of natural, preserved sunlight!

Probably no other planet bore so great a responsibility as Jupiter. Upon the work of its scientists depended the future existence of our planetary life. Randal Jovrite spent long and tedious hours developing and perfecting machinery to manufacture his space projectiles in the shortest possible time. There were three shifts, as on the other planets, so that continuous work, both night and day, was made possible. Bert Arakort's ray-proof tubes were modified to serve their purpose in the projectiles.

Every genius was brought out in those trying days, when speed and accuracy, along with newer devices, were vital essentials.

When the first ship was completed, a trial flight was made, and an ingenious method was used to determine the accuracy of the generators and various speed gauges. Telescopes at two different places on the giant globe of Jupiter were erected, separated by some 75,000 miles. The trial ship rose silently into the air. When it was 10,000 miles from the surface, the signal was given, and the ship flashed off along the path of its guiding alkali ray. Exactly one minute later, a series of twenty-five atomic bombs were automatically released from the escape tubes, each bomb calculated to explode with an enormous flash of light, every second, for twenty-five successive seconds. The telescopes on Jupiter sighted the first few flashes, and automatically registered the angles of elevation for each succeeding flash observed.

The exact distance to each bomb was accurately computed, making allowance for the time taken for the light of the flashes to travel to Jupiter. In this way, the speed of the space machine was determined, and was found to be far greater than that of light itself. The alkali ray and the ship had been successful! Some ten minutes later the space flyer came gliding back to its origin.

Now that the first projectile had proved a success, the work on the other flyers was rushed. Thousands, nay, hundreds of thousands of men were stationed at various machines and instruments, and a continuous humming and buzzing of gears and cutters reigned for the next six weeks. Hundreds of thousands of tons of materials were rushed to this great city of Calaphrite. Within the two months, the hundred thousand projectiles were completed and lined up on the vast plains nearby. Each machine was 400 feet in length by 75 feet in diameter, and weighed 240,000 tons when loaded. The pilot ship was much larger, being over 800 feet in length by 160 feet in diameter, and had a combined weight of 1,600,000 tons. Every one of the machines shone with a peculiar violet haze. Every one was equipped with the most advanced type of machinery and instruments achieved by mankind. Every control board was dotted with hundreds of dials, levers, switches and gauges, all arranged and timed with almost infinite precision.

In other words, every machine was a perfect masterpiece of great Randal Jovrite, and far more wonderful than those depicted in his address to the scientists two months previous!

The third month was a busy month for training. The foremost scientists of the whole solar system were brought to the Calaphrite plains and were taught the movements of every mechanism and the manipulation of every dial and switch on the control board—how to read the various gauges, how to act in case of emergencies and a host of other things. Strict discipline and obedience to orders was absolutely necessary to insure success. Each ship was to have eighteen men, six on a shift at a time, while six would be sleeping and the remaining six amusing themselves in the dining department or lounges, or relieving the men at the instruments. In the event of unexpected failure of anything on the control board, a duplicate set of controls at the left side of the projectile could be handled. However, everything was built so precise that such a failure was impossible.

In the pilot ship there were to be fifty of the greatest living planetary scientists. I was chosen, along with Luke Solar, Dr. Martin and the other great inventors and discoverers. Every modern comfort was to be enjoyed during our trip. Randal Jovrite was the directing chief and guiding genius of the whole fleet. We had a few trial flights, with a thousand projectiles for half an hour at a time, and Jovrite was greatly pleased to announce that we were trained well enough for our adventure into the unknown and that on the following Monday the combined fleet would leave Jupiter to head for binary Eta.

The last few days were busy ones for our planetary scientists. Provisions of every nature were loaded into each space machine, besides the finest medicines and chemicals for every possible emergency. Complete chemical laboratories and research rooms were stocked to capacity. A large number of the new improved space suits were stored in each ship. Even games were not overlooked, and long bookcases with their volumes were at our disposal.

Meanwhile new scientists were being trained to assume all our former responsibilities and to take over our old duties in guiding our solar system.

Nearly every defense had been perfected by now, so there would be little to fear from the distant attackers during our absence. Nevertheless our temporary successors were urged to overlook nothing and to keep up a continuous research work for finding newer and better theories with their appliances, formulas and other advancements.

By Thursday all our work was completed. Everything was in readiness. The huge space ships seemed to shine even brighter as they waited on the Calaphrite plains, side by side in long rows. Our successors were all well accustomed to their new duties. All industries were busy as usual. However, a great number of wealthy people from every planet had come to Jupiter for the last two or three days to inspect the wonderful, almost superhuman fleet. As for us scientists, we earned a well-deserved rest on Friday, Saturday and Sunday.

CHAPTER V.

The Journey Through Stellar Space

AT SUNRISE Monday morning (according to the calendar of Jupiter) we awoke, had our last breakfast and bade farewell to the swarming crowds of people from every planet. The men got into their respective machines, while the fifty greatest scientists, including myself, made their way to the large pilot ship. At exactly five hour minus* we gave a three-flare salute, and as Randal Jovrite closed a plug, we rose gracefully and silently from the ground. Almost immediately the next machine rose, then the next, in quick succession, till the last ones were in the air. A wild gesture of hands came from the onlooking crowds as we rose higher and higher at increasing speed. At ten miles high the whole fleet was in position, a central regiment and two outer wings, all behind the pilot ship. Each outer division contained 30,000 ships, in lines 100 abreast and 300 deep. The central mass had 40,000, with 100 abreast and 400 deep.

The order was given to increase speed, and the front machines accelerated considerably more to widen the distance between each line. At the same time the outer ones spread out to give more space. Our master ship was now greatly in advance, and as the dials were slowly turned we sped on faster and faster. The other hundred thousand machines were obeying the commands of Randal Jovrite by means of a radio equipment and a magnetic telegoscope, not unlike the old telegraph systems of 1940, but using selective radio waves to transmit the impulses.

I glanced at the speed gauges. The pointer was steadily moving. 1,000 miles per hour, 5,000, 10,000, faster and faster! 100,000! By now we were well out of the range of Jupiter's enormous gravitational pull and were traveling in space. It may be wondered how we could keep our positions without any planetary gravitation whatever. Since 1952 every space car was equipped at the base with graviterons, operating on the electro-magnetic principles of attraction.

Our speed was nearing three million miles per minute when the order was given to switch on the alkali ray. Instantly we felt a very slight shake, and we were traveling at the speed of light. In order to keep all gauges and clocks working accurately for computations and calculations, our special electronometric wave machine in each projectile was constantly used throughout all high velocities to nullify the effects of the Lorentz-Fitzgerald contraction. These peculiar waves had the property of completely destroying all those changes brought about by such extreme velocities, near that of light and above light. I cannot explain the principle nor the action of these waves. Neither do I know of anyone else who can. It seems that their inventor, Randal Jovrite, is the only man capable of understanding such a complicated action. All others have failed to follow his explanations. They only know that the waves actually accomplished their intended purpose.

Gradually the planets were disappearing from the range of sight. The sun was no larger than a dime. Faster and faster we flashed on in the direction of Eta Cassiopeiæ, the pointers on our alkali gauges moving slowly across the figures L-5, L-6, . . . L-10. The solar system was now left far behind and only the sun could be discerned as a small, star-like object, though still much brighter than any other star. L-30, L-40, L-50. . . . Randal Jovrite pulled the levers further to the side. The pointers crept to L-80. We were traveling at 80 times the speed of light along the path of these strange alkali rays, these invisible rays whose properties had no effect on ourselves! I again looked back at our solar system. Our sun appeared as a faint star. Before us loomed stars of unusual brightness. It was interesting to note that the stars on either side appeared as long streaks of light owing to our enormous speed, while some of the machines near our ship could be plainly viewed through our telescopes, since all our projectiles were traveling at the same velocity. Our speed relative to each other was nil.

As we flashed on several large meteorites came into our path. However, our magnetic repulsion instruments were producing a constant anti-magnetic field, and this served to instantly hurl any obstruction far to the side. A few invading comets were disintegrated by means of our lesser rays, which we shot out continuously. Our new omega light shaft was also brought into operation. This shaft of light was projected before us and, like a great many of our other rays, possessed the property of traveling at about 500 times the speed of ordinary light. By adjusting the dial on the feed mechanism, we caused this shaft to spread out at right angles when 100 million miles ahead of us. Any large object which happened to be in our path was instantly illuminated. It must be remembered that in outer space and darkness objects are invisible unless they shine by their own light or reflect the light of some star.

Hour after hour we kept our course. Half of us slept while the other half or so was on duty. Jovrite's position was taken in turn by Dr. Martin, myself and a few other leading scientists. The same method of shift was practised in other machines. At times, when we were free, we amused ourselves with games or joked. There were dozens and dozens of books to read. There were no set hours for meal time. When we were hungry we ate. Food was cooked with electric heating coils. Concentrated food was generally used. When we felt tired, we went to bed. It mattered little when we slept, our sleep was always refreshing. Out in the dark space beyond eternal night reigns, so one can sleep almost any time.

Day after day our huge and mighty fleet flashed on. How strange it did seem in this eternal silence, without so much as a sound save the faint hum of electric coils and the noise of our own movements within! How dismal and lifeless did this boundless expanse of nothingness appear! Could there be an end to all of this! We felt sure there was, but it must be inconceivably remote. Would we ever reach any of those distant heavenly suns that loomed in the distance as points of light? Some of these stars were beginning to appear as very tiny circles, but still they seemed enormously far off.

It was difficult to forget the vast and dreadfully dark velvet silence without. But, nevertheless, we certainly made the best of the time we could. Whenever we were not at the controls we read books, played games and talked over old happenings at home. Some of us experimented in the general laboratory provided in each ship. I spent a few hours now and then working on different rays and magnetic coils. Dr. Martin toyed with similar apparatus, while Rifton enjoyed himself in preparing and testing rare gases such as nexine, elakteum and phthaline. Jovrite, on the other hand, was always trying to improve upon his inventions used in driving the fleet forward. At times we listened to the phonograph, and this seemed to cheer us up. Owing to our high speed and our enormous distance away, it would have been absolutely impossible to pick up a television station on our old solar system, so our television screen remained idle throughout.

During our journey we were probably always met

* A day of Jupiter was divided into twenty parts, from 1 to 10 being designated minus and from 11 to 20 as plus. Their day is about ten of our hours, hence a part would be equal to one-half an hour earth time. Thus 15 o'clock on Jupiter would be spoken of as 5 hours plus.

with meteorites and comets, but our far-searching rays and anti-magnetic field cleared our way, and we were never aware of any of these obstacles except in the case of a few very large ones which flashed into view and caused a slight deflection on our attraction gauge needles. Several gigantic comets were clearly discerned to our fore, but they never succeeded in breaking through our magnetic barrier. We did, however, notice indications of hostile rays, for very often the krypton ray proof tubes emitted orange rays of light. At times our magnetic coil gauges registered a slight resistance, and the outer surface of our projectiles was almost always bathed with a peculiar purplish-green phosphorescence.

About the thirtieth day (as calculated from a 20-hour day chronometer) we noticed that Eta was becoming unusually bright. It was almost as large as a dime. Its two components could readily be discerned as one of rose and one of blue. As each hour passed on, we seemed to be approaching nearer and nearer. Seven days later Eta was still larger, and we could detect its system of planets with our telescopes. Another four days and we could actually see four planets without optical aid. We were certainly approaching the system quite rapidly. Measurements with the kappa spectroscope proved that we were within less than three days' distance, and the attraction gauges registered a very slight but perceptibly distinct gravitational pull.

On the forty-second day Randal Jovrite gave the order to turn off the alkali rays and switch on the reverse power. The atomic repulsion motors at the fore were instantly galvanized into action, and the whole fleet rapidly decelerated in speed. The needle slowly moved across the speed dial, L-80, L-75, L-70. . . . In five hours the pointer was hovering around L-25. Jovrite thought it advisable to retain this speed for a time, and the reverse power was shut off. Another day and we were getting very close. The double sun was now almost as large as our own sun appears from Mars. The reverse power and repulsion were again resorted to, and in another three hours we had decreased our velocity down to the speed of light. The forty-fourth day found the outermost planet rapidly emerging into view.

We had now shut off our search rays so as to remain unnoticed as long as possible by the planetary beings of Eta, and only our invisible protection rays were still being sent out. Having passed the orbit of the outermost planet, we decided to slow down and bring our fleet to a halt. Meteorites were still coming, and now and then the mysterious hostile rays were noticed. As yet we had apparently not been discovered.

CHAPTER VI

On Eta's Hostile Planets

JOVRITE ordered one hundred projectiles to follow our pilot ship while the rest of the fleet remained in their position. We quickly set off for the second outermost planet, which happened to be only a few billion miles distant, and we covered this in less than an hour. As we neared the huge globe, which appeared about 400,000 miles in diameter, we noticed how weird the scene was. From the peculiarly dense atmosphere were reflected (or shall I say refracted?) the multicolored rays of the twin suns, and an endless expanse of very faint spectral hues met our eyes. As our speed had now dropped to a thousand miles an hour and we whizzed through the air, we also noticed that the landscape was bathed in lurid rose and blue shades, with a dominant tinge of purple intermingled.

When we finally landed softly behind a small hill a sample of the air was tested with our aerosic and was found to have a mean density of five times that of the ordinary air on solar earth. Moreover, there was no oxygen whatever nor any trace of the other familiar gases! This atmosphere was certainly far stronger than any we had ever known or even imagined. It seemed to be composed of some four or five different components, none of which were combustible, but which would support combustion fairly well. Strangely enough, this new air permitted one of our specimen mice to live in it, and we ourselves took a few cautious breaths without experiencing any serious or uncomfortable effects. Evidently these gases were highly complex compounds suitable for respiration. And the temperature was scarcely less than 10° C.!

Leaving half of the crew in our pilot ship, the rest of us scrambled out into the open. What a scene! The ground was of a siliceous nature, rising here and there to form blue or rose hills, depending upon the position with regard to the suns, which were now high up in the sky, separated by 45 degrees of arc. How wonderful did these suns look in all their gorgeous splendor! Through the thick, but unusually clear atmosphere, we could see the marvelous coronas of each, one of gigantic rose flames and the other of quivering blue tongues. And yet each sun seemed to tint the other a delicate purple.

The region in which we had landed was quite hilly. Here and there were large tree-like growths. Some were reddish-looking thistle-like shrubs of about six feet in height; others were much taller and of a fancy silken nature, with trailing mites of leaves strung on thread-like branches. Here and there again were really large trees of a brownish metallic nature. All around were little patches of some sort of short, grassy stems of a purplish metallic appearance. In all these cases there was not a single trace of chlorophyll, the green coloring matter so vital to life on our old solar system. Further on, upon the top of the hill, were a few scattered bunches of some reddish fern which opened out and stretched its tendrils upward threateningly when touched. There were many other very curious types of vegetation.

Suddenly we noticed a shadow before us and a moment later a large bird, about the size of an eagle, alighted not far from us. The bird came slowly towards us with outstretched wings and stood motionless before Rifton, holding its head up in an inquiring manner. Upon proceeding to caress it, we found the bird to be quite tame. Now and then it would ruffle its wings, then look up and utter unknown syllables. During this procedure we had an excellent chance to study it. Having a wing spread of about twelve feet, it stood five feet high and probably weighed about 200 pounds. Its breast was grayish, with a black spot under the head. Its back was colored alternately with bands of rose and green on a faint grayish background. The wings were tinted similarly, but with almost all the hues of the spectrum. It was a magnificent creature of the air!

"Sceer-r-r-k . . . sceer-r-r-k!" came an abrupt, shrill cry from the next hill, and as we turned we saw an enormous spider-like creature skimming rapidly toward us. Instantly we grabbed our ray pistols and played a halo of cosmic light about the oncoming beast. It stopped and now seemed to consider what to do. Immediately a shrill scream came from the bird, and it charged toward the monster. We turned our rays away, not wishing to harm our recent bird friend. A few seconds later three more of these huge birds alighted from nowhere, and a concentrated rush was made on this large spider. A series of choking, guttural sounds was heard as the monster felt the sharp bills and talons from all sides.

A terrible fight ensued, in which birds and monster

rolled up and down, twisting in every way possible to avoid the other. The birds were winning, for we could see the monster rapidly losing strength. But the tide turned when a dozen other spider animals came up rapidly to the scene and entered the fight. Three of the beasts made for us, but we kept them at bay with our cosmic ray pistols. And those creatures were certainly hardy, for they were able to withstand our rays.

At a signal our space rocket machine came up to our side and a core of lanthanum light was shot into the midst of our attackers. They gasped, groaned and sagged heavily to the ground. The other monstrosities left the bird fight and came gliding toward us, but in a few moments we felled them with our core and even disintegrated several into vapor. The birds were astonished and could scarcely believe that their enemies were lying about in dead heaps. Our feathered friends came over to us, and with a soft brush of their wings, and a succession of unknown syllables, proceeded to show their gratitude to us for having saved them.

The first thing we did was to inspect the lifeless forms. They proved to be an unknown specimen of large tarantula, about three feet high and some ten feet in diameter, legs outspread. The bodies were all black throughout, but contained a sort of grayish blood. Their long, thick legs, of which they had eight, and their large, cylindrical body denoted unusual speed and strength. We were to learn later that these were the slaves of a higher civilized race.

As the birds seemed to possess almost human intelligence, we began to try to communicate with them. We took the two remaining ones with us into the projectile and proceeded by drawings and reference to various objects to learn their language, which was indeed quite simple.

We eventually learned that thousands of years ago they were a race that inhabited the six outer planets and a flourishing civilization was maintained. But suddenly a race of spider-men living on the inner eight planets grew very powerful, and as their civilization increased rapidly, they invented many new weapons and began to extend their sway on the other planets. They drove the bird men off one globe after another, until they were now on the second last planet. The feathered civilization was blotted out wherever possible and much of their science was copied by the spiders.

During the last thirty years these spiders had perfected devices for hurling large meteorites into space, and they could also capture passing comets and meteorites and hurl these out at enormous speeds. An incessant warfare was made against other planetary systems and a number of mysterious destructive rays were also directed out into space. Several times other stellar fleets came and wrought much destruction, but they were always beaten by the insect spiders. Since that time these insect men were so enthusiastic to conquer other planetary systems that they gradually forgot their desire to utterly destroy the bird race. And so the bird men suffered few attacks now. The few thousand remnants of a once highly organized race were huddled together in these hills here and there on the last two planets.

We decided to see something of this queer race of spiders, so giving the four birds comfortable space in our pilot ship, we arose silently, followed likewise by the other hundred ships and speedily left Yiffcrif, as this planet was called. As we sped on we told the bird men of our civilization, our solar system, how we had been threatened with destruction from meteorites and rays, how we had built our enormous fleet, most of which was now waiting outside this planetary system, and how we had come through interstellar space, armed with the most deadly weapons known. We explained that we would like to find out a little more concerning the spider civilization, because in a very short time we might have to bring our huge standing fleet into service for the destruction of the whole race of hostile insects all over the Eta system.

The birds listened eagerly to our purpose and were more than eager to aid us in every way possible. Meanwhile Jovrite flashed a signal to the fleet out in space that everything was all right so far and that we were off to explore some of the inner planets. As our ships flashed onward, we headed for the center of this huge system and made very rapid progress. The birds were greatly interested in our new alkali rays and were more than puzzled at our demonstration of speed.

As we neared the inner planets we noticed small spherical objects traveling back and forth between the various worlds. Two hours later we alighted in a secluded spot on the fifth planet nearest Eta, and we hastily surveyed the landscape. Far to one side rose a huge tower, surrounded by lower and massive buildings. Through our telescopes we could see vast suspension bridges hung high over a large lake and joining large erections on either shore. Along these bridges ran weird machines, manned by metallic-like insect beings, whose actions were of an unnatural, mechanical motion. On the lake were similar tank-like contrivances, all based on the rolling caterpillar tread style of locomotion. By means of our long-distance short-wave spectroscope we found the lake to be not of water but of mercury, which accounted for these heavy machines floating on its surface so easily. At one side were a number of large spherical space ships, around which many insects were working. On the far side, high up on a hill, these beings were manipulating huge ray-projecting machines, and several times we noticed large masses of earth hurled skyward at enormous velocities.

Jovrite twisted a dial and turned on the small contra-magnetic exciter and instantly the surrounding region for miles was set up in a state of magnetic agitation. The insects were now acting strangely, and it was evident that they had discovered something unusual with their mechanism. All at once a dozen creatures rushed into a large space globe and with a rapid lift into the air proceeded quickly in our direction. They had evidently discovered the direction of the source of interference.

The space globe was nearly upon us, and we lost no time in forming a defense. The cosmic ray and several other powerful shafts were flashed on and focused upon our attacker, but to our great surprise failed to produce the least effect. By this time signals must have been sent, for over a dozen globes were now fast coming to the scene of action, and already our krypton protection glow tubes showed that hostile rays were leveled upon us. As the attackers neared us we released a small quantity of R-14 atomic powder into the midst of the foremost globes. Our ships immediately arose and flashed to one side, while at the same time we focused a heavy beam of cathode rays on the green powder. Almost instantaneously an enormous flash of light occurred, followed by a violent shaking of the earth below. Four of the globes were a mass of wrecked atoms and the remaining ones were badly smashed. The insect men were torn beyond recognition.

We immediately lost no time in making a hasty getaway, and the projectiles shot out behind our pilot ship and into the higher atmosphere, where we were soon far above the surface of this planet. However, we were not destined to escape so easily, for, far below, from either side, rows of globes were rapidly heading for us, armed with colored rays and shafts of light. We sped up faster, but it was evident that we were in for another fight.

Jovrite ordered our projectiles to wheel around and face our enemies. With some of our deadliest rays (only short range ones could be used so close) flashed on and a small repulsion disc in operation, we shot down towards the globes in mass formation. A few of the globes reeled to one side and then sank down. The others were separating into smaller masses and were trying to play a series of unknown rays upon us. As we neared we branched into two lines to form a V, and as we swooped down our cores of lanthanum light played great havoc on the globes. A moment later we had broken through the enemy lines and we were now rising from the debris-filled air.

However, these insect men were certainly very courageous, for amid the terrible destruction of their lines the remaining globes still continued the fight and were already launching a second attack. This time we projected some E-3 atomic bombs down on them and we rose higher. As the bombs fell and the globes neared them, we focused the cathode rays on them. An enormous explosion, accompanied by a number of lurid flashes of light, occurred in their midst, and the remaining globes were pulverized.

After our victory over these insect men we made a swift, keen survey of the region and were about to soar away when we caught sight of a pale yellow haze in the distance, and a moment later we could recognize the same weird, tank-like monsters that we had seen crawling swiftly across the lake. Hovering over and advancing at the same pace was an army of globes. They were still some miles off when a bright halo of light rose above them, and we saw the deadly shafts of light play all about in our direction, as if trying to locate their intended victims. Instantly we flashed on our most powerful cosmic rays and at the same instant set the secondary magnetic repulsion motors working. Two of the projectiles went dead, and as the enemy rays shone on them the two rapidly plunged earthward. As they neared the surface Rifton in our pilot ship focused the grid waves on the two and succeeded in landing them gently. A few of our ships shot down to the ground and both crews of the disabled vessels were taken aboard a dozen projectiles.

Having no time to investigate, our ships rose quickly and sped higher and higher, meanwhile keeping up our protective barrier of rays. By this time the tank-like machines had reached the two disabled pojectiles and at once the globes rushed upward after us. But they were too late. We had already gained the outer limits of the atmosphere and were now traveling in space at a thousand miles a second.

The globes kept up their pursuit for a short time, but were unable to reach us.

Another swarm of globes were heading towards us from the next planet. They certainly were coming at a tremendous rate, but we fed our generators more power, and as soon as our speed reached 75,000 miles per second we were easily able to elude our attackers.

Jovrite flashed a message to the standing fleet that we were O. K. so far and that we would arrive later. Some of us wanted to land on another planet near the middle of the system, but the bird-men advised us not to do so, for on almost every planet our arrival would be met with hostility. So we followed a direct course toward the fleet, using full atomic power. The alkali ray was used moderately for about half an hour to bring us to the outer limits of Eta's planetary system. As we neared Yiffcrif, the planet on which we had met the birds, Jovrite decided to spend a short time on it, so we decreased our speed rapidly and finally landed in about the same location as before.

We at once decided that the whole, or at least a large part, of the planetary system of Eta would have to be destroyed. But before doing this we must save the bird race. Our bird friends stated that not more than 25,000 birds were in existence. Each of our machines could hold easily another five occupants without any inconvenience. That would mean about 5,000 ships. So Jovrite told the birds to hurry away to spread the good news to every bird man and to bring their population together in small groups as near us as possible. When the four feathered folk were off Jovrite ordered the standing fleet to send a recruit of 5,000 ships to Yiffcrif, the thirteenth planet. They were to be guided to us by our rays and when they landed near in the vicinity they were to take five birds into each projectile.

Two hours later we noticed a long black line appearing above the horizon, and a few minutes later we recognized an army of birds led by the same four we had met before. Here and there, all over, small groups flew down to the ground, until finally we were surrounded by thousands of birds extending over a considerable area.

Hardly had they arrived thus than we saw a flare high up in the heavens, and in a few seconds the projectiles came down and settled in long rows, forming huge rings about each crowd of birds. The projectiles on the outer limits set up a continuous outward barrier of powerful rays as a protection against hostility from the insect men. A similar protective barrier was flashed upwards.

Our four bird friends got into our pilot ship, while the others clambered into the other 5,098 projectiles, four or five birds into each machine. Many of these birds had brought with them small relics and articles of their once great civilization. Some carried with them books (and queer books they were—all metallic, but light and with metal pages upon which were printed curious words), and a few had not forgotten intricate looking, small contraptions and devices that suggested scientific instruments. These they carried into the projectiles very carefully and encased in small feathery boxes.

This embarking took most of an hour, and when finally every bird man had been safely embarked, the slide doors were closed and the triple sets of "vacuum" doors were sealed. Our pilot ship rose silently into the air and hovered about five miles above the surface to take note of the surroundings. A keen, quick survey assured us that there was no danger in sight for the time being, and Jovrite wasted no time in ordering the army of projectiles to rise quickly in columns and follow us, accelerating at 6-Ex.

Three minutes later found our small fleet of over 5,000 ships safely out of the atmospheric limits and pressing onward at a high velocity. When sufficiently clear of the planet's sphere of influence, the alkali ray was resorted to, and our short range waves were also employed. We were now flashing onward faster and faster at a velocity greater than that of light and safely protected by our anti-magnetic barrier and the constant shower of our protective rays. Fifteen minutes later we checked our speed rapidly, shut off all rays and soon arrived at the standing fleet.

We reported what had transpired and we decided that the only measure left was to destroy life on some of the planets, perhaps on all of them. We would annihilate everything on one or two of the inner worlds as a preliminary, and if that made no change among the rest of the savage insects we would extend our devastation to the other planets. But we were in no immediate danger yet, our fleet being still unnoticed by the insects.

So we decided to sleep for a dozen hours or so, keeping only a liberal staff of watchmen on duty in their respective turns.

And now came the attack.

CHAPTER VII

The Attack

THE dark, black, boundless void of outer space produces a certain longing for sleep, especially if one feels tired, and one may sleep for hours in this limitless firmament. Such was the case with us. When a few of us awoke in our pilot ship, after a long nap of thirty hours, we felt well refreshed, but we could have slept several hours longer without any undue discomfort. However, as soon as we began to stir for a while the sensation of hunger set in and we proceeded to satisfy our desires with a few tiny morsels of concentrated food. At the same time we awoke the rest of the men in our ship and sent out a signal to all the other machines.

After our repast we entered into a discussion as to the best plan we should adopt in our annihilation project. Arakort suggested a plan of releasing our most powerful concussion bombs on all the insect cities. Another idea, advanced by Rifton, was to quench all life with heavy, cloudy veils of poison gas. Dr. Martin suggested the projection of a heavy barrage of rays on the cities, while I myself thought it an excellent idea to bring into operation some of our magnetic attraction and repulsion discs in an effort to wreak havoc among the insect machines. Jovrite's uncanny brain gave us another suggestion, that of firing some of our penetrative ray bombs into the midst of a city. After entering the ground unnoticed for almost a thousand or more feet, they were capable of exploding with such force as to erupt the whole crust of the soil for miles around. Although we had only a limited supply of these, they could be used in times of stress.

Many other suggestions were offered, but it was finally agreed to adopt the several excellent methods advanced by Arakort, Rifton, Martin, Jovrite and myself. It was also decided that the 5,098 ships containing the bird men would remain behind with a large part of the fleet while 25,000 projectiles along with our pilot ship would undertake the project.

The ships lined up in rows, 125 abreast and 200 deep, and we shot off toward the flaming rose-and-blue orbs of Eta. The alkali ray was used for almost the whole journey. Then we decelerated until we were cruising along at a few thousand miles per hour, when we neared the innermost planets of the system. Our army of ships divided into two parts, each 100 deep. Our part headed for the planet nearest the binary sun, while the other part proceeded to the second planet.

With all our short range protective rays streaming menacingly before us, we encircled the planet slowly, descending lower and lower, until we were within fifty miles of the surface. We set our speed to 2,000 miles per hour, and over every city-like cluster we saw, our atomic torpedoes were released with lightning speed. In some cases we wiped out whole communities, miles in diameter, with our powerful rays. So sudden was our attack that we met little opposition at first. Through our telescopes we could see multitudes of insect men scurrying here and there for protection. A few globes, armed with rays, came up to meet us, but they were immediately hurled into destruction by our bombs.

We had almost wiped out everything on the whole planet when we were attacked very suddenly by an army of globes. Several of our projectiles reeled under the heavy charge of rays and rocks fired at us. In some instances the globes dashed wildly at us in an effort to crush our ships, irrespective of their own danger of being likewise smashed. To make matters worse, we were continually bombarded from below by huge masses of earth and rock fired from the insect machines on the ground. We made several concentrated rushes with our repulsion waves and succeeded in wrecking some of the globes. A few atomic bombs were also sent down into the city. Our chief handicap lay in the fact that, although we had 12,500 ships, they were in such a close formation that only the outer machines could effect much challenge and we could not get out far enough to use our long or even medium range waves and rays.

The second division of our projectiles had far better success, for soon after our encounter with the insect space globes the second 12,500 ships came along to join us and, seeing our enemies, proceeded to attack them. Evidently the insect men had not expected the arrival of a third party in the conflict and were concentrating all their defensive rays on our side, leaving their opposite side unprotected. And so, when our reinforcements came along, they shot out such a fury of rays that hundreds of insect globes collapsed to pieces. While the insects were plunged into this wild confusion our side launched a number of K3-C4 atomic torpedoes at the enemy and we immediately retreated some distance. Several seconds later when the torpedoes hit their mark an enormous explosion rent the ranks of our foes. When the debris cleared only a half dozen globes could be seen just outside the zone of destruction and these were scurrying out into space toward the other planets. We quickly pursued these and succeeded in disintegrating them all with our special cathode rays.

Part of our divisions then returned to the surface of the planet to complete our destruction and we finally located the great city from which the rocks and meteorites had been fired at us during the conflict. It was the work of a few moments to level the city with several atomic bombs, and we moved on in search of other remaining centers of civilization. Fifteen minutes later we waved good-bye to the planet, gathered all our forces together and lined up in orderly rows. We had been quite victorious in the recent trying struggle and had suffered the slight loss of only three ships. But we were taking no chances of being cornered again. So we shot off into space and headed for the standing fleet.

CHAPTER VIII

The Enemy Onslaught

AFTER a refreshing nap of some twenty-five hours, our fleet awoke to life, and we greater scientists discussed our recent experiences with the insect globes. The main problem that confronted us was how to proceed next against our aggressors. All our short range military appliances had proven as successful as could be expected, but we needed something more than that. We dared not use our long range instruments in such close quarters, except in the most extreme cases when every other appliance had failed.

Although captured meteorites and other celestial wanderers were still being fired in every direction, they were not so dangerous and numerous as at the beginning. We believed we had accomplished some good in this respect. In fact, in another few days (calculated only by our chronometers) we noticed from our position that the bombardment had ceased altogether, and we began to wonder if the enemy were not willing to agree on some terms of peace. Two or three more days elapsed and still no visible sign of renewed activities! Not a meteorite from the vicinity did our gauges register. (These collected the magnetic impulses which every projected body sends out!) Not a ray did our krypton tubes reveal! It was as if the enemy had suddenly ceased to exist!

But strange as it seemed, we were not to be fooled

so easily. We knew that there was but one possible explanation for this unusual silence on the part of our enemy. We knew that over on those strange worlds it was almost a dead certainty that those hateful insect men were evolving treacherous plans to charge out on us and annihilate our fleet. Our powerful telescopes revealed little except blurred forms here and there against the soil on the various planets.

Jovrite seemed to be pondering over the situation for several hours when, as if struck by an electric bolt, he suddenly came to life and ordered the whole fleet to turn about and retreat several billion miles. It was as if he had actually overheard the plans of those far-off insects.

"Boys," he said, "those damned insects mean something. I wouldn't be a bit surprised if they attacked us the very next minute. As sure as I'm alive, they are planning a huge onslaught, and if we don't steer out to a safe enough distance away from this system, there may be little left of us in the next few hours. *The alkali ray, medium, for at least half an hour!*"

He fairly yelled the last command through the microphone to the other projectiles.

"Don't you think we ought to use our long-distance defensive instruments safely now, in the event of an onslaught from the insects?" asked Dr. Martin as our fleet was winging its way farther out.

"Darned right," laughed Jovrite. "In another few minutes we will be out far enough, and we'll use everything we have if the necessity arises."

Several minutes later we glanced at the gauges and Jovrite viewed the planetary system through the telescope.

"All right, alkali off, switch to low—plug 14. *Bring to halt!"* he barked, and almost instantly his hand closed over several handles and shot them back to one side. A few other dials were manipulated by us, and fifteen minutes later found our whole fleet almost at a standstill.

"Fleet reverse! Stand by!" he completed his commands, and our great fleet slowly turned to face the now distant system of Eta.

We flashed on intermittently our faint high range magnetic opposition detectors to give us warning of any approaching menace. Now and then we took turns in exploring the distant system through our telescopes. We noticed small blurs here and there around some of the planets, but could distinguish nothing unnatural.

Five hours later, however, we saw the first indications of the onslaught. Through our powerful telescopes we could discern regular masses of machines emerging from many of the planets. As soon as they were clear of the shrouding atmospheres, we plainly saw that these machines were the insect space globes. Slowly the various masses came together to join in one main body. Slowly, it seemed to us, although we knew that they were moving at high velocities. Twelve hours later the globes were all lining up in rows to form one main fleet, which began to approach in our direction.

We immediately turned on our long range magnetic repulsion motors. Our krypton ray-proof tubes, of course, were still being constantly supplied with electric juice from the 905-K batteries. (These, by the way, were the well-known kind of batteries that generated a current and were capable of re-using the same current over and over again without the need of supplying more. Once the circuit was connected and the circulation of electricity started, no more juice was needed unless the krypton glow tubes encountered other rays, in which case there would be a slight amount of energy used from the battery. The presence of the continuous glow in the krypton tubes can be explained by the fact that the electric photons came into the tubes, surrounded the interior and returned to the batteries, only to be sent out again, and the ordinary light striking these moving photons produced the continuous peculiar glow.)

We adjusted our gauge dials and sent out a few of our disintegrating rays. With every necessary precaution taken, Jovrite ordered our fleet to advance rapidly toward the aggressors. Since our powerful contra-magnetic field had an average range of hundreds of millions of miles, it wasn't long before this agitation took effect among the insect globes, and we saw several of the foremost ones reel and get hurled with terrible force to one side. Some of our high tension rays disrupted more of the space globes.

And then a most peculiar and astonishing thing happened! There suddenly appeared before the insect fleet a small, fog-like vapor which enlarged itself with every increasing moment. Larger and larger grew this almost transparent cloud, which was now beginning to assume a ghastly phosphorescent glow. As this transparent screen increased to still greater proportions, it fairly blazed with a blinding light. Our special glare shields were adjusted over the telescopes and through the latter we could see the huge army of globes approaching us at a high speed. Moreover, neither our high tension rays nor our vast contra-magnetic field had the slightest influence on our aggressors. I must admit that our lester rays did break up the luminiferous clouds into a number of vaporous clusters at the first, but the resulting gaps were only knitted across by more of the strange substance.

"Follow an arc around the enemy," shouted Jovrite at the microphone, at the same time manipulating some dials. *"Accelerate at 7-E, dial 6-E . . .!"*

"If we can get around them, we might be able to attack them with our rays from the side or from behind and thus avoid that protection screen of theirs," turning to us after a moment. I had already guessed what was his idea from his orders.

"Dial 8-K . . . Alkali Ray up to 250 *frequency."* (Lest you wonder how complex and dangerous the accurate operation of dials was in the other projectiles, let me remind you that as soon as any dial was moved in our pilot ship small signal bulbs glowed simultaneously on all corresponding gauges and around the switches in all the other ships by the process of atomo-magnetic induction. Thus any danger of misunderstanding orders in the other ships was reduced to almost an absolute zero.)

As we traveled along on a huge arc around our enemy, the latter turned their craft in our new direction and instantaneously the bright, phosphorescent protective screen was shifted into position before them. So it seemed that these insects were directing this cloud by means of a magnetic propulsion process. Hence it was impossible to reach them from the side or from behind. Our only alternative lay in charging directly into them with all our known destructive agencies in operation.

I suggested this idea to Jovrite. He nodded, "So I was thinking, and with all repulsion motors and rays in full swing, and with our present speed above that of light we should be able to dash into them and hurl them to pieces on each side . . .

"Slacken speed, alkali ray down to 35 *frequency, then constant!"* He was now speaking at the microphone.

Several minutes elapsed. Jovrite scanned the speed gauges, then continued:

"Right arc, 12 *degrees plane. . . . Charge!" Propulsion motors, 3R . . . 4R! All rays on control* 3; *lanthanum core! Charge!"*

We were now facing the distant screen and enemy. The bright, phosphorescent emanation grew larger and larger as we shot on.

"What's our speed on that dial now?" I asked.

"L-7, almost L-7, and steadily rising," spoke up Rifton, who was scrutinizing the various speed gauges and testing the feeders.

"By Jove, we're fairly near now; something ought to happen," laughed Dr. Martin.

Each of us waited breathlessly for the clash. As we flashed on, the distant enemy drew nearer and nearer. Inside our krypton glow tubes glowed brilliantly from the hostile rays. Outside all our protective and deadly rays blazed forth in death-dealing ferocity. Before us shone the livid cone of

We took the two remaining birds with us into the projectile, and proceeded by drawings and reference to various objects, to learn their language, which was indeed quite simple.

lanthanum light, deflected here and there in spots by the invisible lester ray, one of our most powerful disintegration shafts. Our whole fleet was bathed in a sea of dazzling green and blue luminosity, which increased enormously in intensity as we neared our objective, while each projectile glowed fiercely from the radium emanations shot off from the surface.

On we flashed. We were now within fifteen million miles of the enemy and the phosphorescent veil was assuming gigantic proportions of blinding intensity. Bright flashes were occurring between our fleet and the screen and also behind it, where the enemy globes were speeding. Slight shocks were now being felt.

Suddenly there was a terrible flash of light and the whole of space seemed rent by a colossal tempest of raging fire. Our ray tubes emitted blinding lights and loud snaps came from the engine gauges. Almost instantaneously our projectile was shaken from end to end by a most titanic force, which sent us all sprawling in every direction. My eyes closed and for a few moments my brain was in a whirling turmoil. I sensed a terrible pounding on my forehead, while my arms and legs ached from the force of my fall.

All was silent now, save for the droning of our abused atomic generators and motors, which fired on faithfully. As I opened my eyes and lifted my head, I saw all my fellow men sprawled on the floor, Strepton lying as far as the fuse box, some fifteen feet away. Only Jovrite and Martin were up, Jovrite tugging away at the stabilizing levers, while the sturdy Martin was working on the atomic control switches with one hand and rubbing his head with the other.

"Full force onward, straight!" growled Jovrite at the microphone. Then turning to us: "Everyone all here? Damn those devils! If it hadn't been for that good old propulsion lever, I'd have been pitched clear over the electrostatic atomic fuses and smashed those gauges. I just grabbed the lever in time."

I had already managed to get up and help Jovrite at the instrument board, while the others were slowly rising to their feet.

"What happened?" barked Arakort, rubbing his side vigorously.

"We were blasted to one side," spoke Martin excitedly. He was now viewing the outside through one of the side telescopes on the left. "About a quarter of our fleet is with us, while the rest is away off, separated in parts, on the right side of the enemy. The insect globes are far behind us."

"We must get our fleet together again (through the microphone). *Turn to the left and head for our left division,"* shouted the great Jupiterian. *"Out yonder, if you hear me, swerve inwards to meet us."*

There was a slight hum, then a voice broke in: "Andrews, of 3472, caught your order; nerves badly shaken up, no injuries, commanding this side nearest you, heading towards your division!"

The humming on our secondary telegoscope died out as the voice ended.

Another slight humming and then two more voices . . .

"Jacobson, of 72,905, knocked out a bit; heading our side towards you!"

"Ralph still alive, in 30,944, gathered all our machines up now; on the way!"

By this time the other men had all regained their feet and were moving about stiffly. We peered out the front, sides and rear into the dark space surrounding us. All our rays and magnetic cores were still in operation and we were still surrounded by a faint luminescence which seemed unusually faint after our experience with the terrible blinding flashes.

Far to our rear, we could see a very faint phosphorescent screen, and mixed about it was the army of globes. Through our telescopes, we could make out a very confused fleet of globes swarming about and trying to form orderly rows. Some of the insect machines seemed to have been disintegrated, but there were still a very large number of them now forming new lines. The luminous screen was jagged in many places, but it was rapidly assuming its former shape.

On the right, we noticed a dark streak gradually becoming larger, and a few moments later, one of the divisions of projectiles came up and swung in adjacent to our own division.

From the telegoscope receiver came a voice:

"Andrews, of 3472, in line with fleet!"

As we watched, two other lines on opposite side were now becoming larger, and several moments later, the other two divisions came up and swung around behind our main division.

Again came two other voices:

"Ralph, 30,944, arrived, in position!"

"Jacobson, 72,905, all in line!"

By now, our whole fleet was in orderly rows, and Jovrite commanded: *"Contact bulbs on glow, EA-64!"*

Almost a hundred thousand pink bulbs glowed on our number chart. Jovrite scanned the list for dark ones. There were 16 blank bulbs, which meant that 16 projectiles were absent. Therefore we had sustained a loss of only 11 ships in this conflict, the other five being victims of our former scrapes.

As we viewed the outer void, we saw that we had drifted far to one side of the system of Eta, and that the insect globes, protected by their phosphorescent screen, were circling around their system and heading towards us. It was useless to attack them again. Retreat on our part seemed the only temporary thing to do. So we wheeled around on a large arc, reduced our speed below that of light, and coasted out slowly in an opposite direction to the planets. The globes were approaching us rapidly, but we retreated only fast enough to outrange them.

Meanwhile, we were discussing our recent conflict, and were puzzled as to why and how we had been repelled with such force when in close range of the enemy.

"It couldn't have been their repulsion instruments, nor their contra-magnetic field, whatever they have," remarked Martin, thoughtfully.

"And it wasn't our field that recoiled on us," remarked Strepton. "Of course, we smashed some of their globes, in fact quite a few, but that wouldn't account for such a titanic jolt. Why, I thought our whole machine had collapsed!"

Arakort, unnoticed by us, had been examining the inner capsules connected with the outside space tanks. These tanks were separated from the inner tubes by special valves, while the outer parts of them were open to space. At any time we encountered any gaseous medium, or the like, these tanks became filled and automatically closed their outside valves. If we wished to determine the composition of an atmosphere thus, the gas was admitted by valves into the inner chambers, where an aerosic could be employed. It was these tubes that Arakort was examining when he gave a shout which brought us over to see what he had discovered.

"Luminous!" he exclaimed. "Alive with vapor; the tubes are glowing, with bright flashes all through!"

"By Jove, you're right!" replied our commander, Jovrite. "Undoubtedly a sample of that enemy cloud. We'll test it."

So saying, he opened the valve and admitted the luminous medium into the aerosic. Arakort performed the tests, but all efforts to define the constituents or formula of the strange gas failed.

Rifton took a sample of the gas to the chemical laboratory, where he applied his knowledge by viewing the vapor through a spectroscope. But, strange as it may seem, there were no lines visible; the characteristic spectrum was uniformly blue throughout its whole length. But when he used the ultra-microscope, he gave a leap of joy.

"I can actually see small suns!" he exclaimed. "This vapor is not a gas at all; it is just an aggregation of Atomic Protons. They are all positively charged, and hence are repellant to one another. Here, take a squint through," and he moved to give me access to the huge device.

As I looked through, I could clearly see a vast collection of tiny particles bouncing around slowly (unlike the rapid motion of molecules), each seemingly trying to avoid the others. But what struck me most was their terrifying brilliancy; they were all a white-hot blue, flashing throughout. So these were atomic protons, then!

"You'll notice that they repel each other," explained Rifton, master genius in the science of rare gases and elements. "Those insects kept the whole cloud together by a magnetic device, which they probably also used, or something similar, to guide the luminous veils before them."

"Then that accounts for our tremendous jolt?" asked Arakort.

"Exactly You must remember that such a vast aggregation of these atomic protons would have a titanic repellant power. When we came within their sphere of influence, they repelled us with terrific force. The fact that we were traveling at such a high speed of over a million miles per second caused our fleet to be blasted on every side so abruptly. When we felt that awful recoil, we had probably already penetrated a good deal through the screen."

And he was correct! We all agreed. Our enormous speed had been responsible for us being hurled aside so violenty. Had we been coming slower, our own repulsion waves would have aided us, and we would probably have been deflected very slightly and gradually. As we thought the matter over, we knew that it would be impossible to reach the globes through such an impenetrable medium as their protonic screen.

By now we had been retreating for some time, and we could see the insect space fleet slowly returning to their system. Evidently they were satisfied that they had driven us out for the time being. As for us, we were far enough from them to be comparatively safe for a while. We decided to snatch some well-earned rest, and try out other methods of attack after our rest.

CHAPTER IX

The Coming of the Comets

DURING the next several days, we kept cruising along slowly towards the system of binary Eta. We were trying to contrive new modes of attack on the insect worlds, but not one idea seemed to meet the situation to warrant our attempts. I had several excellent ideas, but these, unfortunately, could not be put into practice, owing to our peculiar circumstances. I had thought of driving a powerful blast of electrostatic waves into the insect system, but I knew that we would need at least a very large mass such as a planet behind us to act as a brake guard for the tremendous energy directed. Dr. Martin had a few ideas, none of which seemed to aid our situation greatly. Even the great Randal Jovrite, Jupiter's greatest scientist, science lord of our whole solar system, and directing genius of our gigantic fleet, was unable to master the problem at the time. The rest of the scientists spent their time idly reading and discussing vague theories of attacks, or else amused themselves at the telescopes. I passed some of my time in discussions with Rifton, who just couldn't leave the chemical laboratory, and who never gave up the hope that he would discover something to help us smash everything on Eta Cassiopeiae.

Now and then, as we searched the outer void with our telescopes we could distinguish various masses of rock and meteorites hurtling through space in all directions, being projected from the system of Eta. At first they were few in number, but now they were growing very numerous, and in order to avoid being struck by them, we were obliged to keep some of our medium range repulsion motors in operation. At times our krypton tubes glowed dully, and our other instruments also told us of the renewed projection of alien rays from the insect worlds. Very often we could discern the large fleet of globes cruising around and close to the central planets of their system, guarding their worlds from any chance attack on our part.

We had been drawing slowly closer to Eta for several days, and Jovrite thought it advisable to use some of our long-range rays. For a few hours we fired a continuous volley of cosmic and lester rays at the inner planets. As we watched every detail through our powerful telescopes, we could see that in many cases our shafts were wreaking havoc on the enemy cities, although the destruction was by no means rapid or widespread. In return, of course, we were also being showered with deadly beams, but these had no effect on us, as many were repelled by our long-range contra-magnetic field, and any rays that succeeded in passing through this barrier were changed into harmless or beneficial energy by our ray-proof tubes.

Suddenly we noticed that our attraction gauge needles were quivering strangely. Our glow plugs began to assume the most extraordinary luminescence, which increased every hour. We were beginning to experience slight shocks, and our electrical instruments seemed to be on the point of induced short circuit. Immediately we switched on all our repulsion discs and generators, together with our electro-magnetic disintegration motors. The power of the unknown force was checked.

But what we saw when we viewed the outer black made us start back in awe. For heading directly towards us, hardly more than a few hundred million miles off, was a gigantic army of comets and meteorites, blazing forth with terrible intensity We stood there speechless for an instant, gazing in helpless horror, and yet questioning wonder, at the marvelous majesty of the enormous spectacle. But only for an instant! I heard Jovrite's voice barking at the microphone, as his hand shot forth like an electric bolt, and jammed back the power levers of the atomic generators:

"Atomic E! Atomic E! 30 degrees; 200 across; higher!"

Our projectile gave a tremendous lurch forward as it flashed along away from the menace at the new speed. The oncoming danger was becoming larger and larger as it approached us at its terrible velocity, and for several minutes it seemed as if it would overtake us and smash our fleet to atoms. Jovrite feared to use the alkali ray until our speed was sufficiently high, else we might be dashed to pieces within by our own sudden and enormous acceleration.

As our chief strove with the speed and power controls, Martin and I worked feverishly at the repulsion plugs, and we shot out at the menace all our most powerful contra-magnetic waves and disintegration rays. Several of the foremost comets exploded into a confused mass of gaseous nebula, while others were thrown

violently to one side. However, the main body, stretching over millions of miles in width, continued to grow larger as it steadily drew nearer to us. It was hardly more than a few million miles from us, and seemed to reach out and envelop our whole fleet in its awful grandeur.

Again the stern voice of the great Jovian broke out on our ears, as he continued his orders:

"Alkali, dial 8-K; steady up on high frequency; full plugs!"

Another heavy lurch forward, as our fleet flashed onward under the powerful draw of the alkali shafts. I looked tensely at the terrible pursuer, which now seemed to sense our high acceleration, and appeared to be striving to reach out for us. It was still drawing nearer, as it increased its speed. Could it be more than half a million miles behind us? On all our rear, extending from side to side in never ending line, crept the enormous army of raging comets. Terrible flashes of light and fire blazed all around us, as we strove on and on to escape the titanic onslaught. Ghastly slashes of green phosphorescence darted among the various nebulous comets and rent the foremost heads, as our faithful rays thundered back savagely into them with the utmost fury.

Gradually the gap began to widen a little, and we knew that we were now traveling faster than our enemy. This gave us renewed vigor, and we brought every known coil into operation. Martin and I still continued to pound out the deadly rays, while Jovrite strove to increase the speed still more:

"Higher frequency! Alkali full! Full feed!"

The existing gap between the comets and our fleet continued to increase steadily as our alkali generators droned on faithfully. The speed gauge needles moved slowly across the dials as our velocity climbed higher and higher. L-15 . . . L-20 . . . L-25; we were now leaving our pursuers rapidly behind. L-40 . . . L-50 . . ! The enormous line of comets from side to side began to contract more and more until we could now see the entire extent of the menace as it waned in the distance. Several more minutes and the raging pursuers were left hundreds of millions of miles behind.

As soon as we were far enough ahead, we swung our fleet along a huge curve and headed around the immense system of Eta. Our velocity was now so tremendous that it did not take long to swing around on the far side of the system, almost at right angles to the distant menace. From here we again swung out and followed an almost straight path away from Eta. We flashed on for several minutes thus, and when our long range magnetic attraction gauges no longer registered much interference, we checked our speed rapidly, and were soon coasting along under light* on a long arc.

It was several hours before we could see what was happening with the comets, since we had traveled far above the velocity of light. However, as soon as the first light rays from the comets reached us, we were all at the telescopes. It seems that the insects had watched the invading army of blazing comets approaching their system, and they were preparing to repel the invaders. For now, long rows of huge insect globes were rapidly rising from the planets, and were speeding along in one great army to meet the menace. And what an army! In our last struggle with them, we realized what a large fleet they had. But now their tremendous defense must have numbered over half a million machines.

As the comets, spreading over a hundred million miles in the front line swung around towards the insect fleet, we plainly saw the square-like machines behind, which were driving and directing the blazing fury before them at such terrific speed. The force used in propelling such a vast line must have been of an electromagnetic nature. Far behind their line pulsed the rhythmic glow of brilliant pencil-like rays. Fiery shafts of terrible phosphorescence played all along the blazing comet heads.

The two foes were drawing together in all their terrible splendor; the raging comets on one side, the bristling globes on the other. And now, surrounding the globes was a ghastly green glow which began to extend its sway forward in the shape of a terrible phosphorescent cloud ahead of the advancing insect fleet. We knew it in an instant—the protonic "fog," which had proven so dangerous to us before! As we watched in breathless awe, the deadly cloud assumed the most extraordinary dimensions, and sent out threatening arms of colossal extent. Dazzling shafts of disintegrating rays now shot out to spend their fury in the fiery comet line. Equally dazzling were the searing beams that struck back in answer to the insects. A veritable shower of piercing light reigned between the two foes as the intervening space contracted more and more.

Finally the great smash came. And, oh! what a spectacle! Never shall I forget that terrible scene as long as I live! We hardly knew what had happened as we saw the titanic explosion that sent out livid blue flames for hundreds of millions of miles in all directions of space! Enormous gashes of ghastly green and pink phosphorescence darted out with poison-fanged tips of flame. For several moments everything was blotted out in a colossal tempest of raging inferno. Our own instruments quivered fearfully from the tremendous creation of the most powerful electromagnetic disturbances.

Several minutes later, when the blazing flare subsided, we saw the work of destruction. About one-fifth of the globes were pulverized, and the great protonic "fog" was broken into wild fragments. But the comets! Scarcely were there half of these blazing heads remaining, and among them floated a small fleet of ragged square machines whose terrible appearance told of the dreadful effects of annihilation. Far out on every side were seen disrupted nebulous masses.

The battle was not over by any means, though. The insect globes were striving to organize, and were now pelting their foes with a shower of fierce rays. Their huge, luminous protonic screen was closing around the comets, and the globes were charging again into the midst of their foes. The alien machines had drawn up behind their blazing line of remaining comets, and were returning the attack with unknown rays and shafts. For fifteen minutes we watched the two forces wage a battle of annihilation, as the losses steadily mounted on each side.

CHAPTER X

War for All!

JOVRITE had ordered our fleet to approach nearer the scene of the battle. He considered that we were practically safe as long as our high range contra-magnetic waves were protecting us. Furthermore, with the two distant enemies occupied in fighting each other, there was little chance of one party attacking us. So we drew up close to Eta's system, that we might be better able to launch an attack if a good opportunity arose. Some of us thought it an excellent chance to land on the planets and destroy all we could while the insect militia was occupied. But Jovrite would not listen to this. In the first place, there was a good chance of being cornered if the battle drifted towards those

*An expression meaning below the velocity of light. "Above light" is a simular expression

worlds. In the second place, Jovrite would not take an unfair advantage on the insects, even though they had been the instigators of all this trouble. In fact, all of us admired those devilish creatures for their wonderful courage and determination.

While we watched the struggle, we failed to notice anything far out on either side of us. Perhaps we had not noticed anything strange for the last several days. But now there suddenly loomed on opposite sides two very bright lines, which continued to increase in size with every minute. One was coming from the direction of the Pleiades, while the other seemed to originate from Canes Venatiei. As the two huge lines drew closer, we could distinguish a row of asteroids led by a small sun from the Pleiades. The other line seemed to be a huge mass of thin nebulous material.

As the two great invaders swept inward towards the struggling conflict, the insect globes turned to meet the small sun and its asteroids. The comets at the same time swung around to fight the nebulous line. Immediately, the terrible protonic "fog" swelled out into an enormous cloud before the insect army. Fiery rays spat out from their machines and lit up all of space before them. The protonic screen was now of colossal extent, assuming the most cadaverous shapes, and shooting out fearful arms of blue-white flame. Another army of globes was now rising from the planets near us, and was speeding towards the scene. Several minutes later they joined their fellow globes, and a gigantic insect fleet of over one million machines flashed onward behind their protective screen to meet the oncoming menace.

"Can't we do something?" cried Randal Jovrite.

"We must" he thundered, after a pause. "If we don't strike now, our whole island universe may be threatened. We must strike before any one foe becomes too powerful."

"Just wait one minute" shouted Dr. Martin, hastily. "Suppose we decide on something new, if we are going to attack them?"

"We can't go blindfolded any more!"

"We would be smashed if we came close to that protonic fog of theirs, and we wouldn't be any better off between those comets and asteroids," declared Rifton, emphatically.

"How about trying your quadramometer, that works on the fourth dimension principle?" queried Luke Solar, who had been silent until now.

"It will not work in this case; the electrical disturbances are far too great to warrant the slightest success," replied Jovrite.

The tremendous forces were now closing in on each other. The alien sun and its line of asteroids had struck the huge protonic screen, and were hurtling through it at a terrible velocity. Furious rays and violet balls of flame flashed all about the fog. A second later, thousands of asteroids belched out in every direction, and the globes were cutting their way through the alien line. The alien sun, still surrounded by a vast number of asteroids, was wheeling around in an arc to join the rest of the planetoidal masses. These were now forming a huge semi-circle about the protonic fog in an effort to reach the globes.

The comets that had turned to meet the opposite enemy, were enveloped in the swift, onrushing nebulous mass. The terribly confused mass was plowing through the insect screen. The impact was accompanied by lurid veils of glowing vapor and blinding flashes. Huge masses of nebulous matter were catapulted for millions of miles in every direction. Thousands of globes were hurled about into space; thousands of comets were blown to atoms; hundreds of thousands of asteroids were disrupted in the livid sheet of flame.

CHAPTER XI

The Fitzgerald Contraction

As we watched the furious battle, I began to wonder if it were possible to change ourselves into the fourth or some higher dimension, so that we could enter the struggle in safety. I had remembered Jovrite talking about the special electrometric wave machines with which each projectile was equipped to nullify the effects of contraction from high velocities. A moving body contracts in length along the direction of motion according to a definite equation.

$$L = l\sqrt{1 - \frac{v^2}{c^2}}$$

L being the new length, l. the original length, v the velocity of the body, and c the velocity of light. Under normal conditions, the body traveling at a velocity of light contracts in length to zero, and the object is then in only two dimensions. If the speed is greater than that of light, the contraction involves an imaginary length, i. e., a negative quantity under the square root sign. It was this idea that struck me.

"I have it I have it!" I cried, leaping to my feet in ecstasy. "The Lorentz-Fitzgerald Contraction will help us!"

"How? . . ."

"Let me explain," I replied, calm now. "You know that all our projectiles are equipped with electronometric wave machines whose action is to nullify our contraction at high velocities. But suppose we disconnect these machines temporarily? The faster we move, the more will our length contract. At the velocity of light, our length will be zero, according to the Contraction Theory, and we will be existing in two dimensions only!"

I wrote down the figures rapidly on a cardboard and held it up:

$$L = l\sqrt{1 - \frac{c^2}{c^2}} = l\sqrt{1-1} = 0$$

Everyone followed me eagerly. I continued:

"When we use the alkali ray we shall contract still further, only now our contraction involves imaginary quantities. For example, let our speed be twice that of light. Then we have:

$$L = l\sqrt{1 - \frac{(2c)^2}{c^2}} = l\sqrt{1 - \frac{4c^2}{c^2}} = l\sqrt{-3}$$

Now, I have every reason to believe that we will be changed into another dimension. The $\sqrt{-3}$ can be factored into 3 and $\sqrt{-1}$. But the $\sqrt{-1}$ is the product of three distinct quantities, and I have proven only four years ago that these quantities represent measurements at right angles to each other.* One of these corresponds to the new perpendicular in fourth dimension. Therefore, we have a body of width, breadth, and in place of length, three foreign dimensions. That means five dimensions, all at right angles to one another. We shall be transformed into fifth dimensional objects!"

"The $\sqrt{3}$ is treated as a factor only, then, eh?" queried a voice from the far end.

"Exactly! Any real factor, whether rational or irrational that can be extracted from the imaginary length L, is one or more coefficients that determine the size

*During the late autumn of 1988, while Dr. Ferrum was in his last year at New York University, the world was startled by his amazing discovery and proof that $\sqrt{-1}$ represented the product of three quantities as confunctions of linear dimensions at right angle to one another. He was then only in his twenty-first year, and it was this discovery that sent him sky-high above all the Earth and its open-mouthed professors.

of each new dimension, and thereby controls the extent of the object at a definite velocity. The higher the velocity of the body, the greater will be its bounds."

"Will our transformation involve any serious consequences? Do not forget: we shall not only be transferred to this higher plane; we ourselves, and everything about us will actually be transmuted into fifth dimensional bodies!"

"I do not believe we shall experience any serious alterations. I will admit that we shall probably be plunged into a weird world, the nature of which I cannot imagine at present. But our change will only be proportional to the change of our surroundings."

"Will our machinery and instruments work at all?" asked another.

"I do not see any reason why they should not," I replied. "There would be no harm done in trying out my idea. In any event, being in such a high plane, we would be immune to any dangers from those fighters."

Jovrite was the first to speak after several minutes of silence.

"Dr. Charles Ferrum, I have followed out your theory closely, and I have arrived at the same conclusions as you yourself have. I believe there is no danger incident to putting your idea into practice. Our rays could be used satisfactorily, I imagine. It is high time we were doing something. How about it?"

A score of voices shouted assent.

"All right We shall swing out from Eta, and wheel around on a large arc. This will give us a chance to dash directly into that nebulous matter with full range of rays. We'll try to steer away from the insect globes whenever possible, and strike at their opponents only. These latter are by far the more dangerous if they win the fight. Remember, it may feel strange, but *There Is No Danger.*"

As we turned our eyes towards the scene of the battle, we saw that all four forces were still plunging into the gloom of their own destruction. The globes seemed to be holding their own against their foes, under the protection of their almost impenetrable screen of protons. Observing closer, we noticed that a fifth party in the form of a dense collection of large meteorites had entered the struggle.

We disconnected our electronometric wave machine, and opened all other plugs leading into it. Jovrite ordered all the other projectiles to do likewise. This work took hardly more than five minutes. Then Jovrite gave out the orders, and our whole fleet swung out under the power of our atomic generators. Faster and faster we shot on, with all rays firing, and all magnetic coils in operation.

Since time changes at such high velocities, according to a definite equation dependent on the Fitzgerald Contraction, we were obliged to make special provisions for this. A few minutes to us, traveling at a velocity almost as high as that of light, would in reality be equivalent to a span of thousands or even millions of years in universal history. We would be entirely unaware of this, since, as the contraction applies to everything about us, all clocks are slowed down, as well as our own functioning organs and faculties. Therefore, we arranged a special electric time fuse on each projectile alkali control, so that when our velocity was three-quarters that of light, our speed would thence rise under a rapid acceleration in time, until our change in velocity from L—3/4 up to L—50 would be effected within a few millionths of a second.

Regardless of the contraction, which we failed to even perceive, our speed gauges registered our velocity correctly! Faster and faster we flashed on until, almost instantaneously everything went blank, and we were plunged into hollow nothingness. And almost as instantaneously we, and everything else about us, were crystallizing into the most fantastic abnormalities conceivable.

CHAPTER XII

Fifth Dimension

OUR first symptoms were that we felt unusually dense within although, curiously enough, no undue effort was expended in moving our limbs and body. A soft, howling purr was coming from our atomic motors and generators. As we moved ourselves, strange soft sounds resulted from our movements. I saw Jovrite's lips utter something, and his words, though clear, reached our ears in a series of howling, wailing syllables. I burst out laughing, and immediately heard a most frightful, high-pitched wail.

But such a sight as met our eyes when we looked about us! If the abnormal sounds seemed strange, they were nothing, compared to the unearthly, fantastic sights which struck our eyes. Our relative size seemed unchanged, but our physical appearance was quite different. All of us had the appearance of having been crystallized from a giant bath as crystals from a concentrated saline solution. In examining my hands, and scrutinizing the other men and objects, I could clearly count five distinct dimensions, all of which seemed at right angles to one another! Our eyes were also different, assuming the shape of diamond-like gems, with multiple crystalline lenses which beamed and flashed with spectral radiance.

All objects, instruments, machines, gauges—everything—all bore the same strange resemblance to us. Every single object stood out sharply, shining with a weird crystalline fire, opaque objects glowing like silvered crystalline mirrors, while those transparent flashed out in fiery spectral hues like myriads of moonstones, emeralds, sapphires, rubies, jacinths, etc. Some of our glow tubes assumed strange spectral hues belonging to unknown spectrums. To our greater surprise, we found that we could adjust our eyes by merely drawing in or out on the retina muscles. At our will, we could make objects appear far or near, the action being similar to a set of oculars of various magnifying powers. By adjusting our eyes still more, a row of tiny crystalline prisms was brought into line, and we could see the component colors of any object we wished!

I wondered how our different instruments and engines were working in their new and strange dimensional structure. Most of them presented aspects of the wildest imaginative fancies, but all kept generating their power in relatively the same proportion to one another. One very strange fact was that all electrical instruments had the power of causing visible magnetic forces about them, in the form of a weird, iridescent ball of phosphorescence at each pole, with fainter glowing lines of force extending out and around the sides.

The beautiful crystalline speed gauges registered accurately, uncanny as it may seem. Our speed, as indicated by the alkali pointers, was just over L-50. This reminded me of our purpose, and as I glanced out the windows, I plainly saw the great system of Eta and close by the tremendous forces at war. But how open and simple they all seemed! How hollow did the two giant Etas look, surrounded by their equally hollow planets! How open and unprotected did those distant waging enemies seem, bounded in three dimensions only!

We had hardly scrutinized our surroundings more than several minutes when we heard the high wailing voice of Jovrite. Fifth dimensional sound must cer-

tainly have occupied a span many octaves above ordinary "terrestrial" sound, yet our ears seemed able to determine those high vibrations.

"Quadrant on five degrees. Steady on the switches!" ordered our chief through the weird microphone.

Our fleet was now flashing along on a huge curve, and several moments later we were facing the distant war.

"Quadrant zero; dial straight; medium plugs!"

Now we were charging along towards the distant forces, and their rapid actions were seen in swift succession, since we were fast overtaking the light rays coming to us. With lightning rapidity came every movement they made. As we drew closer and closer, we saw that the insect globes were still holding out fairly well against at least four alien, astral solar forces; while the comets were in a terrible mix with two other enemies which in turn were also fighting against each other. Nearer and nearer drew the huge system of Eta! On we flashed with all our penetrative rays streaming forth, and all our powerful electromagnetic waves pulsing.

"Aim through the comets, and swing on ellipse, dial twenty!"

We were now on the side of Eta, and the great conflagration loomed up before us enormously. The last hundred million miles was but the length of ten seconds! Suddenly the whole region grew to a stupendous flare, and we flashed through the open unprotected gaps of the comets and their attackers. Flashes of light tried to reach us, but in an instantaneous second we were through to the other side, and were flashing around in the path of a colossal ellipse.

As we swung around on the opposite side, we turned our eyes to the scene. It was several minutes before the first light rays of our impact in the battle had spanned the width of our elongated ellipse. Far out to one side we saw the image of our fleet plunging nearer the enemies. Then we saw it pass clean through the center of the confused comets. There was a blinding flare, followed by a scattering of the three war parties, and our image emerged from the other side. The image faded away at the far end of our elliptical orbit.

Again we came around and struck into the midst of our victims. Again we emerged, and as we swung around on the opposite side, we saw the same blinding flare repeated; and fragments of the raging systems were belched forth in every direction. A third, and a fourth time we repeated the same charge. By this time there was little remaining of the smaller battle, and the remnants of the three opponents were separating away into space.

On our return the fourth time, we aimed into the larger war, and sent our fleet through the seemingly open masses. We repeated this procedure a second and a third time, but without much success. Evidently, our plan was nearly useless here. Strange magnetic forces were at play in this war, and these, coupled with the powerful repulsion of the stupendous protonic fog, were sufficient to annul the effects of our rays and waves. We were perfectly immune to any danger from those enemies, owing to our high dimension, but we were also unable to inflict any appreciable destruction on them.

CHAPTER XIII

Stellar Termites

REALIZING that, as bodies in the realms of the fifth dimension, we were incapable of inflicting any damage on the parties engaged in the main distant war, we decided to revert back to our former three dimensions. Accordingly, we decreased the alkali power till our gauge needles dropped to L-10, and set a time fuse on the repulsion motors to take us down to three-quarters the velocity of light in several millionths of a second, making arrangements for our rapid deceleration to wane gently towards the lower speed. As our repulsion coils hummed in the peculiarly high vibrations, we gave a long, last look at the strange and beautiful discs, until our velocity had fallen very low. We were momentarily plunging through the same bottomless abyss of nothingness as before. Another instant, and we opened our eyes on the familiar old three dimensional surroundings.

The speed gauges were registering lower and lower. Jovrite continued the power on the smaller repulsion discs, until our velocity had fallen very low. We then connected our electronometric wave machines to our switchboard and generators, and that done, we turned in the direction of Eta and sped up till we came quite near the huge system. The atomic power was then shut off, our fleet was slowed down, and while a small crew was left in charge to watch our fleet coast along slowly, and to warn us of any approaching danger, the rest of us enjoyed a long restful sleep. When we awoke, we changed shifts with the other men and let them sleep. Of course, this system of shifts was likewise practiced in all our other ships.

For several days thus, we coasted along, drawing nearer to Eta, from where we could now watch the gigantic war unmolested. Jovrite was undecided what step we should take next. There was little use in entering the war and fighting, unless we were obliged to do so in self-defense against an attack. It would be better to let the enemies steadily destroy one another; and then we could burst in upon them and deliver the final blow.

While we were scanning the whole sidereal expanse idly with our huge telescopes, we noticed what appeared at first like a faint band of haze, dotted here and there with countless numbers of meteorite bodies, and coming from the direction of the brilliant white, first magnitude star Regulus, of the constellation Leo (the Lion). The swarm increased rapidly in size, and we were soon able to determine it as a vast accumulation of meteors and meteorites being hurled through space in our direction. It will be recalled as a well-known fact that our November meteors in our solar system always radiated from the constellation Leo. And now this colossal aggregation of foreign bodies was coming from the same old offender.

We set up our medium range magnetic repulsion waves to deflect the meteorites from our fleet when they approached. Several hours later, the immense swarm was sweeping by on every side, leaving a wide space before and around our fleet as the astral bodies bounced off from our magnetic barrier. We could see them as they shone in the path of our light beams. As far as we could ascertain with our telescopes, the bombardment was sweeping in a section billions of miles in diameter. All of the giant system of Eta lay in the path of the onslaught. Even the raging war to the side was pelted with the bombarding meteors and meteorites.

Hour after hour, and for sixty hours, the alien bombardment continued unceasingly. And then suddenly, the showering menace vanished beyond, and all was still for a while. We could see the immense swarm receding further and further in the distance. The great stellar armies were at war again in the distance, and were striving to drift the battle nearer the system of Eta. The insect globes, however, were a difficult matter to overcome, and the devilish but valiant insects were still keeping their foes at bay.

But we were not destined to be left unmolested for

any length of time. For, several hours after the giant meteorite swarm had receded, an army of alien foes such as we had never dreamed of, made its very unwelcome appearance from Leo, the same constellation from which the recent onslaught had originated. And we were soon to learn that, coming down on Eta's system was the most formidable opponent we had ever witnessed. Our huge telescopes revealed, at a tremendous distance away, an army of projectile-like machines, armed with powerful cores of light and shafts of rays. As we watched them eagerly, they drew nearer and nearer, and we could plainly determine their outlines and general character. And what do you suppose they were?

TERMITES!!!

Termites! . . . That's exactly what they were in appearance. We could scarcely believe our eyes! Metallic projectile-like machines they were, some thousand feet in length we calculated, and built on the order of the termite. Two enormous scissor-like mandibles, or cutters, several hundred feet long, adorned the fore end of each machine, while the usual legs and other physical characteristics of the termite completed the outer appearance. Millions of these giant termites composed the alien fleet, which was now dangerously near Eta. Fiery rays and unknown shafts of light shone from between the huge knife-like jaws. Through our telescopes we could note transparent crystal windows pitted around the bodies, and behind these were termites. Yes, Termites! But what Termites! They must have been as large as an ordinary man, and each giant termite machine must have contained hundreds of the dreaded race.

As the terrible foe drew nearer and nearer, Jovrite thought we had better make a move and speed around on the opposite side, behind the giant Eta system. We lost no time in doing this, and furthermore, we concealed our presence by shutting off all rays, beams and waves. The giant termites were heading directly for the waging war, their huge and fearful scissor-like jaws opening and closing in dreadful majesty and regular precision; while flickering rays flashed out before them. They were still several millions of miles from the war, when, suddenly, the battle paused for a moment, and the fighting systems seemed to watch the oncoming foe in awe. And then, sensing their fearful situation, and the terrible power of such an attacker, the conflicting parties spread out to meet their new foe.

And now we were to witness the most awful battle that will ever take place in the history of our universe. It was regular termite "butchery" from the start to the finish! The old enemies forgot their enmity for each other as they fought side by side against their common foe. In the center, a million insect globes advanced, bristling with fiery rays, while well ahead of them was projected their terrible protonic fog. The alien rays flashed all around and into the phosphorescent screen, and in a very short time the front row of giant termites had struck the screen and were ploughing through it. One after another they were catapulted back by the enormous repulsion of the blue-white protons. Yet on they came, again and again, row upon row, mass after mass, striking ever deeper and deeper in their efforts to reach their game.

The fog was now broken in many places; great arms of phosphorescence writhing about, while the giant termites were plunging into the depths of the luminiferous sea. From the front and sides they were closing in amid a tempestuous exchange of fiery rays. Closer and closer! The termites were through the terrible barrier, and were swarming into the allied powers in hungry savagery. A shower of blazing meteorites had little effect on them, as the attackers came on and on. The insect globes, as if realizing their terrible plight, made a determined rush towards their foe, and smashed their million globes into the invading lines of giant termites.

Enormous flashes of fire and light writhed among the conflagration, and the luminous fog, now tattered into small masses, was rapidly encircling the fighting systems. The termites were repelled time and again, but on they came with real "termite determination." Their huge mandibles were a mutual terror. As they struck in, thousands of globes and other machines were sheared to shreds by the wicked jaws. The hardest steel could not resist the enormous cutting power of those giant shears. Thousands, nay millions of fragments were belched forth far and wide, and a heavy cloud of dust-like particles grew up from the titanic clashing.

Both sides were straining every effort to conquer the other. The globes were sweeping around on one side, while the other allied systems were striving to gain the opposite side of the termite fleet. Both sides were losing heavily, although the termites still outnumbered their combined opponents by at least five to one. As the allies succeeded in getting their enemy between their two main forces, they concentrated a terrible convergent blast of deadly rays and beams into the termite fleet. The latter broke up into two divisions, which clashed into their opponents and sheared to pieces everything in their way. However, the allies had not directed their plan in vain, for although the slaughter was wholesale, their tremendous combined electromagnetic forces were sufficient to catapult several thousand or more termite machines far to one side of the war, and almost adjacent to where our fleet was stationed.

As the war waged on, the small division of several thousand termites near us evidently saw our fleet through their telescopes, for they approached in our direction. Instantly we flashed on our forward atomic power, and set up our medium range magnetic repulsion waves. The attackers steadily approached, and we shot towards them, all our rays streaming out before us menacingly. Ten minnutes later we plunged into the termite lines amid a halo of fire and light. We saw the immense cruel jaws snap silently all about our fleet, but our tremendous magnetic forces repelled the giant termites with enormous power, and we emerged unscathed on the other side.

Wheeling around in the path of an ellipse, we sped towards the termite fleet again, which had gathered up its scattered machines and which was returning for a second attack. This time we played a parabolic core of lanthanum rays before us, and as the approaching foe struck the outer border of our deadly core, an instantaneous blinding explosion occurred, and several seconds later we plunged through their lines again. As we swung out a second time, we saw a small cloud of particles which told of the atomic disruption of the termite machines. On either side and about were miserable fragments of the few giant termites which had escaped the disruptive power of our core. This was our first trial test with our new core of rays, and the test proved very successful.

Still these scanty few machines came on the offensive again with every vestige of real termite determination. They were bent on fighting till every last machine was slaughtered. With their huge and powerful razor-edged mandibles opening, they sped towards us at tremendous speed. Again our parabolic lanthanum core was brought into operation, and a heavier set of magnetic repulsion motors was used. Again the giant termites struck our core, and were almost totally disrupted to atomic nebula dust. Only about twenty-five termite machines remained! These still fought on until

we had disrupted all but four, and these last few fled away to join their fellow machines in the war on the other side of Eta. We quickly gave chase, and succeeded in disintegrating them some five minutes later.

CHAPTER XIV

We Attack the Termites

"WELL, not so bad, eh?" commented Dr. Martin, after we had dispatched the recent small fleet of giant termites. "How about taking a dive into those rascals over there? Eh, what, old boy?" he smiled triumphantly, tapping Jovrite's shoulder. "Termites are clever, but our brains are better!"

"What about the insects and their globes? And the fog?" chirped up a voice from the side.

"And the other stellar fleets?" protested a second throat.

It was Jovrite's turn to speak.

"We can defeat the termites, little by little, I believe, and the other alien fleets are not so much to worry over, provided we keep out of their range. The insects in their globes, and their protonic fog are the only real dangers we shall have to watch for——" and he pondered here for several moments as if trying to decide. At last he resumed: "And I do believe we could do something over there. If we are careful to avoid the worst part in the center, and just touch on the sides whenever we can strike a small batch of termites, I think the project is safe!"

Several of the most outstanding scientists argued pro and con over the proposition. I considered it as fairly safe enough.

Finally we decided to try.

"We must remember that, owing to our enormous speed with the alkali ray, we will be almost past our enemies each time before we are noticed. Neither side is expecting us, and the insects are too occupied right now to think of us," assured Jovrite.

So we sped up, using the alkali ray, and flashed on towards the raging conflagration. It was a good ten minutes before we were very near the colossal war. We saw our chance—a small group of several thousand termite machines veering around on the left, just beyond the outer bounds of the fog. We swung inward slightly, aiming our parabolic lanthanum core with great deliberation, and simultaneously bringing into operation our multiple repulsion waves and other rays.

We increased our velocity to L-45, and even as we did so, the small termite division was curling around the side to attack the insect globes through an opening in the screen. But we were too quick for them, and in an instant our powerful core had struck into their midst, burning a wide gap, through which our whole fleet plunged. Our repulsion waves worked splendidly, for as we swung out from the edge of the war, we saw the few remnants of the termite division flung here and there in all directions. Some of the termite machines had been hurled into the protonic screen, and they were instantly blasted back with destructive violence.

We traced an elongated portion of a huge ellipse, and as we swung around and headed for the conflagration again, from the opposite side this time, we saw a large mass of termites slowly pushing outward a small group of globes amid a rain of fire and light. As soon as they were out of the limits of the fog, the termites swarmed all about the globes, butchering everything that their vise-like mandibles could shear. These globes were certainly fighting a most heroic battle against all odds, and as we slackened speed a little to wait our chance, the globes gave an outward lunge together to form a solid mass against their foes.

Here was our opportunity again, and we flashed on faster, aiming into the termites. The globes were just lunging into their aggressors when our core and rays struck their mark. The insects wheeled swiftly around to escape the new attack from us. Our whole fleet swept on through the confused mass of gnashing termite machines, between the phosphorescent fog and the war within on the one side, and the rows of the small division of insect globes on the other. We felt a slight tremor as we encountered alien magnetic forces for a brief moment. The second termite division was wrecked!

The globes, evidently greatly encouraged by our attack on their foes, burst into their broken enemies on every side, driving them into the protonic screen, and completely annihilating these termites.

This division of insect globes swerved around into the screen to join in battle with their larger fleet which was struggling with tremendous forces. We swung our fleet around and came back again for a third attack, our eyes searching from side to side for another excellent chance. Nearer and nearer we sped, and still no opportunity awaited us. We turned our fleet outward, and circled around at a great distance, scanning the conflagration on every side. Finally the screen stretched out on one side, leaving several large gaps. Lurid flashes of light played with more accentuated vigor in this region nearest the planetary system, and the main battle was drifting closer to Eta. Millions of insect globes rushed around to quell the sudden onrush of hordes of termites, while the other allied fleets hacked at their common foe with rays on every side.

Now a horde of giant termites had broken away on the far side. This was our chance. Without waiting to see what their intention was, we shot forth at them. We were almost upon them when two fleets of the allied powers launched an attack on their foe from both sides. We urged our alkali power more strongly, hoping that we might make it. Our rays and core sheared clean through the termites, and we flashed into them blasting out in every direction their machines and debris, amid a halo of phosphorescent flashing of light. But we had been a trifle too late, the allied enemies had closed in, focusing tremendous electromagnetic forces into the midst, and we were barely through the masses when we were all thrown off our feet amid the violent shaking and vibrating of our whole fleet.

However, our high velocity saved us, and as we scrambled quickly to our positions, the faithful alkali generators sent our fleet rapidly away from the conflagration. But even as we sped away we were pursued by an enormous mass of giant termites. They chased us for a short time, but finally, being unable to overtake us, they returned to the scene of the battle. We calculated that it would take them some minutes to turn back and reach the war again, and accordingly we circled around, sped back and were just in time to cross into the termites while they were still on their return journey. With our lanthanum core and magnetic repulsion waves we succeeded in disintegrating almost one-quarter of them, while many others were badly smashed. We took several more dives at them, taking a considerable toll each time, until the remainder of their division finally reached their fellow machines in the war.

Our last attack was not so entirely successful, however, since their unknown but powerful rays were able to burn out a number of our atomic fuses on the rear control switchboard. There was nothing more to do, temporarily, but to swing our fleet out, cast off on the farther side of Eta and repair the fuses or replace them with others.

This occupied the next several hours.

CHAPTER XV

The Strange Signals from Space

WE had repaired the damages inflicted on our switchboard by the termite rays in our recent clash, and we were moving slowly along on the other side of Eta's enormous system, on the opposite side from the raging war. We did not feel disposed to fight any more for a time. A little rest and enjoyment was entirely welcome, and after a long, refreshing nap we amused ourselves in various ways. The food cabinets worked overtime, although there was still plenty of provisions remaining to last us several years or so.

A day or two later (calculated only by our chronometers) I had been exploring about some of the television coils connecting to an ultra-radio receiving set. I was indeed surprised when I heard a faint hum in the tubes. Were radio waves being broadcast from outside somewhere? No, it must be an aural illusion! None of our radio-television stations on our old solar system were powerful enough to send waves out to such distances.

Again came the peculiar hum, faint but perceptibly distinct. The small bulbs were also glowing faintly. There was no mistake this time. Someone was broadcasting radio waves or trying to signal us. I connected the plugs and slowly manipulated the dials. The hum increased until suddenly a faint light flickered on the television screen. Then abruptly it went out, and several tubes and fuses were blown. Ah! high frequency and very heavy waves! The tubes weren't large enough to withstand the heavy impulses. I immediately replaced them with stronger and more powerful tubes and connected the circuit with some high tension fuses.

The strange hum came on again now, and the tubes began to glow with more life. Once more I turned the dials back and forth slowly until a bright beam of light shot out of the television projector and lit up the screen with a dazzling brilliancy. The center became black, changing into dark blue, which spread out concentrically until the whole screen was a mass of the same color. I manipulated the concentration dial very carefully. The other fellows had come around by this time and were watching the screen anxiously.

The outer edges of the screen then turned black, dotted with starry points of light here and there, while the greater part about the center became a lighter blue. Oblong hazes of light thronged this part, and these brightened on the edges and became darker on the insides till we could discern a great number of projectile-shaped machines armed with flickering rays of light. A fleet! The word came from a dozen throats. A strange stellar fleet! And they were signaling to us or to someone else. But where were they and whence did they come?

Our huge telescopes failed to show any sign of such a fleet in the outer void. Evidently this strange newcomer was still remote from us. We watched the television screen eagerly, but the same scene was depicted for several hours without any change. At times a dull sound was heard from the radio loudspeaker, but all efforts to obtain a reasonable sound failed.

Then suddenly the screen went pitch black for some moments. We were about to readjust the dials when the screen lit up again and the scene depicted the interior of a projectile-like machine not unlike our own space flyers and similarly furnished with strange machines and apparatus. Human forms were shifting here and there, while the nearer ones were gathered around a central figure. A man was working at a huge television-like machine, and the scene enlarged till the central figure occupied the whole picture. He was evidently the head of their fleet.

This man, almost identical in appearance with us, seemed of moderate height, fairly thin and not more than about forty years of age. His attire comprised garments similar to ours, but of strange color designs. His face was clean shaven and on his dark-haired head was a white metallic-like crown. His dark eyes beamed pleasantly and his countenance bore an expression of pleasant anxiety. His left hand was now extended forward, holding lightly a small white-and-blue striped flag with a golden star in the central blue patch. His lips moved.

Almost immediately we heard a pleasant liquid voice from the radio loudspeaker and a flow of unknown syllables in an unknown language followed. The voice continued for several minutes, seemingly repeating the same phrases several times during the speech. As we watched, the figure on the screen extended his right hand forward as if to greet his unknown audience. He then bowed gracefully.

Slowly the scene became smaller and melted into the former picture of their fleet shining in space among the beady stars. The voice had ceased and only the steady hum of the tubes and the soft purring of our atomic motors could be heard.

"They are friends" spoke out Jovrite. "Friends from stellar space. They are trying to signal us and have probably come to aid us against those hostile armies at war. Douglas, connect the wires from the batteries to our ultra-televisor and broadcaster, while I look over the works. We'll signal back if we can reach them with our waves. Martin, set our omega light shaft going and cover as much space as possible for an hour or so. They may see our light ray signals. (Through the microphone to the rest of our fleet.) *"Omega light shaft and cover as much space as possible.* Meanwhile we must keep our telescopes on the lookout for any sign of the approaching fleet."

It took us but a short time to get our televisor and radio broadcaster ready, and we equipped it with some of our most powerful tubes and fuses. Jovrite stood before the great eight-foot crystalline lens; the bulbs glowed and the coils hummed. Waving a small white flag in one hand, he proceeded to talk in a pleasant voice:

"Friends! Friends from another stellar system! If you be friends to us, we welcome you. We have received your signals, but as yet cannot locate your fleet. We are on one side of the double rose-and-blue sun, Eta Cassiopeiæ, and its fourteen planets, and our fleet is directly opposite from the several stellar armies at war."

Here he took up a prepared drawing, showing in color Eta and its system, with the raging war on one side and our fleet on the other. He pointed to the fleet and back to himself several times.

Jovrite made a sign for me to join him. We faced the great lens together, my chief taking my arm lightly and saying:

"Here is my friend, Dr. Martin, who has received your signals both in sight and sound. I am the commander of our fleet. We both welcome you, and we shall watch for the approach of your fleet!"

Facing the screen-like lens fully, we bowed together gracefully and extended our right hands forward.

We stepped away from the lens, leaving the machinery on that side in full view, and I returned to the radio and television receiver. The same picture of their fleet in space was still on the screen and the loudspeaker continued to be silent. About half an hour later, though, the signals came on again. The screen lit up brighter, bearing the figure of the same man as before. He appeared very much pleased and we could tell by his joy that he had received our reply signals. In his hand he

held up a drawing on a sheet of paper-like substance, on which was inscribed the solar system of binary Eta on one corner, showing both our fleet and the war, and on the other end of the sheet was depicted another fleet, which he pointed to and back to himself. Their fleet was almost in line with our fleet and Eta. The stranger seemed to be explaining his diagram from the succession of unknown syllables and words we heard from the loudspeaker. He ended by bowing gracefully. The screen went blank and the radio fell silent.

We saw and heard no more about our strange friends until some five or six hours later, when our powerful telescopes, which had been exploring the suspected direction of approach, revealed a bright cluster of objects. These increased in size and brilliancy and were soon large enough to be detected as the strange fleet we were expecting. We shut off all dangerous rays, leaving only ample shafts of light to enable our speeding visitors to sight us more quickly, although we knew that they had located us long before.

CHAPTER XVI

A Friendly Fleet from Rigel Orionis

As we watched, the far-off fleet from the unknown became larger and larger as it steadily approached us at a very high velocity. It was a fleet fully as large as our own, both in size of machines and in number. It was now drawing quite near, and our spectroscopic instruments showed that it had slowed down considerably on the last several millions of miles. It would be a few minutes before the strange fleet would arrive.

At last the first rows of the huge fleet approached within several miles and drew up to a complete halt. A central machine came ahead of the rest and moved slowly towards us. We immediately sent out our pilot ship to meet the lone machine. Both machines drew alongside each other. We decided to act first. Accordingly five of us donned the improved space suits, equipped ourselves with our guiding power and instruments and released ourselves out of the projectile through the triple set of pneumatic doors.

Once outside, we easily made our way with our small atomic propulsion tubes to the side of the other strange projectile. A door on one side was automatically opened and we entered into an outer chamber, Jovrite and I leading, while Martin was close behind and followed by Rifton and Arakort. The outer door then closed itself hermetically and we entered into two more similar chambers before the last door opened into the inside of the projectile.

As soon as we were inside the chief of the strange fleet was there to greet us, extending his hand and bowing, while others crowded around in wonderment. We bowed in reply. Rifton tested the air with a special spectroscopic analyzer and ærosic combined, which he had brought along with him. The test showed that the air contained some 26% oxygen and about 30% nitrogen, the rest being a mixture of unknown rare gases of the inert type. Satisfied that the air was habitable for us, we hastily removed the suits from our bodies and breathed the slightly sweet, odorous atmosphere for the first time.

The chief shook hands with us, exclaiming to our great surprise:

"Welcome, friends, welcome"

He uttered a few more syllables in his own strange language, accompanied by gestures with head and hands.

I shall not burden the reader with too many details as to how we came to make ourselves understood. Suffice it to say that by various diagrams and sketches on paper, and by reference to objects about, it took us several hours to learn the simpler words in both languages, and we were able to converse without undue difficulty. We told these men where we had come from and what we had thus far accomplished in the war. We explained our life briefly, and in return these men told us all about themselves.

We learned that they had come from the huge planetary system of the brilliant white first magnitude star Rigel, of the constellation Orion, a giant sun in light-giving power equal to 14,000 such suns as our own Sol, and at the remote distance of 460 light years. These people had attained a very high degree of civilization, older than ours, and they were somewhat more advanced in some of the sciences. Having always had a tremendous interest in the problems of the universe and a longing desire to explore the special expanse of our galaxy, the seventeen planets of their system built up a huge fleet not unlike ours.

For over two years this fleet had been moving around throughout almost the entire extent of our island universe at an enormous speed capable of reaching the square of the velocity of light by means of a special instrument based on the electromagnetic displacement pressure of space itself. Time and again they had encountered solar systems savagely at war with one another, some of high but brutal intelligence. In many instances these people interfered and put the conflagrations to a stop by completely destroying the warring parties. And now they had come upon a similar war, only this time one involving the greatest scientific methods of destruction they had ever witnessed.

When their fleet was still some distance away, they had watched the giant war progressing for many hundreds of hours. They had seen us fight the fleet of insect globes and saw us repelled by the enormous protonic fog. They had also witnessed the arrival of the comets which we had eluded and which had clashed with the insects. They had watched in marveling curiosity the other alien stellar fleets join the ever-increasing conflagration. They had not missed us when we changed our fleet into the fifth dimension in consequence of the higher planic action of the Fitzgerald contraction and had marveled at our ability when we sent our fifth dimensional fleet through the warring parties, hurling into destruction almost all but the insect armies. (Our new friends had special instruments to collect the light rays from objects up to the seventh dimension, thus enabling them to see our fleet as we vibrated in the fifth dimension.) And, lastly, they had seen the terrible invasion of the hordes of giant termites and the dreadful war that followed. In fact, the enlivened conflagration was so terrible that they were more than glad to keep at a distance.

However, they had studied our actions carefully, and although they could not imagine in what form we existed, they concluded that we must be at least a partly peaceful as well as a highly civilized race of beings. Our ability to receive and to send a friendly reply to their signals confirmed their idea of us and proved to them that we were human beings and were similar to themselves.

After being shown their machinery and instruments, and learning much about their civilization, we invited several of them to come back with us to our pilot ship. This they accepted. The leader and five others put on space suits, somewhat similar to ours though not so elastic. The two daughters of the leader (they were about 23 to 25), having accompanied their father through their great interest and knowledge of space, pleaded to be allowed to come with us. Their father consented, and the two curly haired creatures hastily dressed in

space suits. I was quite pleased. We all made our way out through the multiple vacuum doors and entered our own projectile.

Rajance, the leader of these Merlyrinnians, was shown the main atomic dynamos in the engine room by Jovrite. We others listened to our chief's explanations for a short time. Then Dr. Martin branched away and demonstrated some other instruments and mechanisms to some of the visitors. I took the two young girls with me and showed them our wonderful radio-television contrivances which were instrumental in bringing about the meeting of the two fleets. They were keenly interested and were able to carry on a simple conversation with me in a mixture of both languages.

The others had by this time moved near the huge atomic switchboard and were scrutinizing the various glow-bulbs and gauges. Jovrite explained the huge alkali ray generator and the projector adjacent. Rajance was tremendously interested in our method of traveling on the alkali ray. He expressed visible surprise when he learned that we could attain such high velocities by means of our own power. Although their fleet could attain a maximum speed of the square of the velocity of light, their high speed was dependent upon the displacement power of space and the universe. They had special power generators that reflexed one or more of the various co-ordinates of space, while the elastic electromagnetic tension of the remaining co-ordinates of the poly-dimensional cosmos drew their fleet forward. The principle is analogous to that of surface tension.

To illustrate this, take a piece of iron wire about 12 inches long and bend it thrice at right angles to form a parallelogram. Dip it into a frothy mixture of soap bubbles or lather and take out when a clear soap film stretches across uniformly. Place across both sides and close to one end a long needle so that it meets the film. Then slit the small stretch of film between the needle and the end of the wire. The needle is instantly catapulted forward under the elastic pull or surface tension of the soap film. The film exerts a pressure in every direction in that plane; the displacement along one of these co-ordinates leaves the needle at the mercy of the remaining forces which draw the object back.

When the Merlyrinnians met the bird men in our projectile they were indeed surprised, especially when they learned that these birds boasted of a once highly developed civilization. The feathered beings readily learned the basic words of the Merlyrinnian language, and in surprisingly short time they were able to carry on a nice conversation. Clever fellows, those birds were, in acquiring a new language

Our visitors were now interested in our special krypton ray proof glow tubes, which gave us such excellent protection against the alien rays from the war in which we had fought. Bert Arakort, our ray expert, spared no pains in describing his marvelous invention to these people. Neither did he omit to explain our other various destructive rays which we had shot into the enemy ranks and time and again had gained a victory for us. These people themselves had several similarly powerful rays, but none so fierce as our lanthanum rays and our influence device for converging the rays into the parabolic core. They had seen us play this fearful core of lanthanum light upon the giant termites in our last battles and were terrified at the enormous disruption and annihilation caused.

This led us back to the discussion on the distant war. Rajance and the rest were very willing to aid us in every way possible. Our friends would do all that their fleet would permit, and they had several instruments of powerful destruction which might prove effective against our enemies. The only thing Rajance feared was the enemy rays. The projectiles of his fleet were insulated like ours to shield many rays, but he was uncertain about the penetrative power of a few others which the insect globes had used on us before. However, he was confident that our combined fleets would be more than able to conquer the distant warring systems.

We were quite hungry again as well as sleepy. We entertained our guests in the large lounge rooms, where Rifton played some records on the phonograph, much to the hilarity of everyone. Dr. Martin came over to a sofa with Lurla and Nyola, nodding to me with a smile. I joined them, and the four of us had a very enjoyable time conversing. The Martian savant soon became quite interested in Nyola, so Lurla and I moved off to another quiet corner. I didn't blame Martin for falling in love with a girl as pretty as Nyola. Of course my Lurla was prettier in my estimation. Her sparkling violet eyes gazed admirably upon me as I related to her my recent successes that had carried me to the foremost position in science on our earth. She likewise told me all about herself.

Some of our men had retired to their small rooms and the rest of us were soon to follow their example, for we were greatly fatigued and sleepy. We entreated our guests to remain for their rest, but they declined graciously and departed for their own machine. We would meet together later to discuss plans regarding the distant raging war.

CHAPTER XVII

We Plan a Joint Attack

THE first thought that struck me when I awoke was the gigantic war of Eta. As soon as possible I went to the side telescope and viewed the planetary system. The great fleet of insect globes, fighting amongst its protonic screen, was still courageously battling against its foes and keeping them at bay. It seemed as if the conflagration had increased in dimensions. Another fleet of giant termites must have come and joined in the battle lately, for there was an increase in the number of these merciless butchering machines.

The war was continuing on a grander scale. For even as I watched intently I noticed faint flickers and moving forms on the planets, and I was just in time to see a giant insect fleet similar to the first one emerge from one large planet. (Dr. Martin had now joined me and was peering through another of the eyepieces of this one telescope.) Faster and faster they sped outward to join the battle. Their velocity was very high, but it would take them several hours to reach the conflict and take part in it. We turned away from the telescope.

By this time the television screen lit up and Rajance asked us to go over into his machine to look over some of his instruments and to make plans for our battle against the enemies. We were soon in his projectile discussing these plans.

The most powerful weapon aboard the Merlyrinnian ships was the electromagnetic lightning bolt machine, a huge contrivance composed of induction coils and Tesla coils, that induced high multiple electromotive force into a sort of large magnetic Leyden cell. Surrounding this were myriads of vacuum tubes and special aurora dynamos leading from their main atomic generators. Twenty-four sets of small parabolical concave tellurium mirrors served to concentrate the ultra-negative rays upon a hollow central axle of hardened tungsto-iridium, which extended through the nose of the projectile. On the outside this axle ended in a large spherical knob about three feet in diameter and com-

posed of solid tungsto-iridium. A very high potential could be secured and a heavy spark thousands of miles in length could be made to jump the gap from the machine to any planet or other large body. This invention was truly uncanny and proved how highly advanced these people were in electricity. And truly this contraption was a terrible weapon when in use.

Rajance felt that with these lightning bolt machines his fleet could play their part in destroying the insects and termites. His projectiles were also equipped with infra-cathode beam projectors and other similar ray generators. Each of his ships was lined on the walls with protective crystal enamels, while various insulating devices to repel hostile rays added to their protection. However, they were not immune to the dreadful ultrathoric rays used by the insects and against which we were protected by Arakort's krypton glow tubes.

After a lengthy discussion, we finally decided upon a definite plan of attack. Owing to our superior protection and greater resistance against the enemy rays, our fleet was to make the first drive into the war and attempt to break up the central mass as much as possible. Jovrite was to be given supreme command of both fleets and we were to break up the enemies sufficiently to enable the Merlyrinnian fleet to use their lightning bolts efficiently at as close a range with the enemies as possible. At the same time each fleet was to seek the most advantageous methods of beating the foes, as outlined by our joint plans. Of course the greater part of the fighting rested on our shoulders, since our fleet was a genuine military space fighting machine, having been designed and built specially for the occasion, while the other fleet had been built for a more peaceful purpose.

CHAPTER XVIII

The End of the War

RANDAL JOVRITE was before his main atomic control switchboard, near which an extra microphone was stationed to carry his commands to the other fleet. This microphone was connected to the radio-televisor. Rifton and Arakort were testing the ray machines and atomic torpedo mechanisms. A quick glance and survey over the atomic generators told me that all were in excellent shape. Lurla and Nyola were standing near by, watching with keen interest. They were very much afraid of being in their own fleet, for fear of the powerful insect rays, and had pleaded to remain in our machine in greater safety during the struggle. (I believe I can say what their real reason was.) Rajance had laughed but had finally agreed.

The atomic bulbs glowed. Jovrite's fingers slid over some switches and our machine moved off, swung around in a short arc and headed for the war. The rest of our fleet followed our example as per the orders, and we rapidly sped up under the steady power of our atomic generators. The alkali ray was used and we were soon close to Eta. All protection rays and shafts, besides the repulsion waves, were brought into systematic operation. The other fleet followed us up to the planetary system and slowed down while we continued on and flashed towards the titanic struggle.

The second great force of insect globes had now reached the conflict and were charging directly into a central mass of giant termites. The clash was marked with an enormous burst of fire, and thousands of machines from both foes were disrupted to atomic débris. The rest of the fighting systems pressed inwards, and in this great confusion we saw our chance. Feeding our alkali regulators more power, we shot forth, aiming into a side mass.

As we neared we brought our parabolic lanthanum core into swift operation and urged our other powerful rays and shafts to full capacity. Larger and larger grew the enormous conflagration; now it spread over almost our entire field of view as it took on colossal aspects. We were almost upon it! Another moment and we were dashing through a gigantic body of termite machines. The two girls cried out and buried their faces in their hands as they saw the millions of immense, powerful termite jaws snap wickedly but silently all about us. Livid flashes of searing purple rent their lines amid the raging inferno of lurid fire. In that instantaneous moment we launched a heavy fire of atomic torpedoes and disintegrating bombs. The tempest was lit up by an even greater flash, and we felt our projectiles shaken by a titanic force. An instant later dark space met our eyes from the front and we were through the enemy lines.

Jovrite ordered the fleet to curve around on a wide arc and aim for the farther line of globes which were devoid of their protonic screen. As we wheeled around we saw how successful our first charge had been, for where a large mass of termites had been previously there remained only a dense nebulous cloud about the wide open gap. This fired us with a greater zeal, and as we neared the small army of insect globes we prepared for another devastating massacre.

This time our foes rushed forth to meet our onflashing fleet and their powerful rays played all about our machines. But we headed on, straining our repulsion motors to their utmost. One million miles more! . . . a thousand—smash! we were plunging into each other. Again the whole of space lit up blindingly all about us, and we were bathed in a sea of luminiferous fire as our deadly rays sought their goal and our atomic torpedoes struck their mark. For an instant we were again rocked by tremendous magnetic forces, and our krypton ray-proof tubes glittered intensely under the strain of the hostile rays.

The next moment found us out of the dangerous ranks as we sped above light and on a slight curve. We would return for a third attack. As we swung round now and headed for an outer line of termites, we were again overjoyed to note the terrible disruption we had effected amongst the insect fleet.

Our third charge through a mass of termites proved equally successful, for thousands of the fearful machines were disrupted or else catapulted in every direction by our vast magnetic repulsion field. We retreated several hundred million miles and ordered Rajance to draw his fleet around the battle and slowly close in from every side. All that remained for our fleet to do now was to dash through into a central mass of insect globes and effect a sort of dispersion, in hopes of scattering their protonic fog sufficiently to enable the lightning bolts of our allies to take effect. These bolts were not to be used until we were safely out of reach.

We were now swiftly approaching the storm once more, and we discerned the allied fleet spread out equally in a vast area surrounding the battle on almost every side. Rajance's machines were still at a respectable distance from the center and were slowing down considerably. As we neared our objective we attempted to strike at a thin spot on the protonic fog, but as luck would have it we were spared the jolt. Part of an alien system had broken through, and the screen spread out from the yawning gap. We aimed our fleet directly into this and flashed through into the whirlpool of enemies, firing thousands of atomic torpedoes behind us and manning the ray projectors as deftly. Our core cut the path for us through the closing lines of the enemies, and we were just a little over six seconds traversing the center of the entire raging inferno.

But just as we were emerging on the opposite side a vast swarm of insect globes were making a desperate effort to overtake us from an angle. We saw a part of their protonic fog curving before us and we swerved sharply to escape the reaching menace. We urged the alkali power to its utmost, despite the rough jolt we received through the sudden increase in speed. If we could only escape the outstretched fog before the other near-by mass of termites closed in before us we would be safe! However, the plan of the termites was frustrated by a fearful attack on them from another alien mass of warriors, and only the globes were left to attack us.

The insect globes were drawing near, almost directly before us, and they had succeeded in drawing their fog across in a barrier formation to hem us in from any means of escape. Suddenly we swerved our fleet sharply again and aimed directly into the midst of the oncoming insect army. Thank goodness, our powerful electromagnetic repulsion waves did not fail us, and as our core ate its way through the mass of globes the faithful waves deflected the enemy machines outward with tremendous force.

However, we had not missed the protonic fog. A portion of it lay before us in our path and we tried to swing around it. But with our high speed we had struck the glittering phosphorescent screen within the next fraction of a second. Everything flashed up fearfully; our machine was shaken by a titanic force. Then all became dark for a moment and I felt myself plunging through the air. Luckily the phosphorescent cloud had been quite thin and the force had knocked me no more than several feet away. We scrambled to our positions again.

Our whole fleet had been scattered about, though all of our machines were now out of the danger zone. The fleet of globes on this side was utterly disrupted. The screen was drifting to one side, exposing the great central battle, and as we gathered our projectiles together we saw on one side a large number of Rajance's machines drawing it. Immediately a tremendous burst of sheet lightning leaped towards the fighting systems. Thousands of blue, white bolts of sheet lightning spat out from the Merlyrinnian projectiles and converged into the flaming conflagration. It seemed as if the whole of space was rent by terrific blasts of this electromagnetic lightning, as blazing blue bolts millions of miles wide tore the alien fleets into molten and gaseous masses. We were glad we had succeeded in exposing the greater part of the enemies to the mercy of the lightning bolts. Only that one side protected by the protonic screen remained intact.

We divided our fleet up into smaller divisions and circled around the allied machines to help our friends with our own ray machines and protection waves. The electromagnetic lightning certainly did disrupt the conflagration and its warring parties wonderfully and there remained few of the terrible enemies that had threatened our existence lately. But there were still a large number of insect globes hidden behind their protonic screen and these were now charging outward to attack the Merlyrinnians. So we lost no time in scattering our own machines among those of our ally, and we fired a terrific shower of powerful rays and atomic bombs into the midst of the oncoming enemy.

Our rays failed to penetrate their protective screen. Lightning bolts could not be induced to strike the screen which embodied an enormous electromagnetic repulsion power. The atomic torpedoes struck the phosphorescence, exploded and were belched back or deflected off on the side. Even our powerful lanthanum core proved quite ineffective. The insect screen was as invincible as ever, and moreover we had no desire to dash against it again. So we retreated a little before the advancing host and swung off on each side, later collecting our projectiles together.

The insect globes continued to seek us with their paralyzing rays, and on several occasions the Merlyrinnian machines were put out of commission for some moments when their engines went dead. However, our own protective waves minimized the danger of the hostile beams, and as soon as the other allied fleet had gathered all its machines together we sped away around on the opposite side of Eta's system.

CHAPTER XIX

Destruction of the War-like Insects

THE great interstellar war was almost at an end. The tremendous raging battle that had grown to colossal proportions in its last stages was no more. The belching fires, clashing rays and searing beams of blinding intensity no longer spattered the velvet blackness of space. No longer did the expansive lines of alien planetary fleets meet in furious combat. No longer did the countless hordes of terrible giant termites practice their merciless butchery and inconceivable slaughter. For all these recent enemies now ceased to exist! In their place floated a vast thin cloud of primitive gaseous nebula. Only one enemy remained. It was a small fleet of not more than several thousand insect globes returning to their binary system with the remnants of their former huge protonic screen.

We had succeeded in our purpose! With our two great fleets and by our combined efforts we had destroyed the enemies and had forcibly terminated one of the greatest interstellar wars ever fought. There was little to fight against now. Only the reduced fleet of insect globes remained unsubdued. True, they had driven us back and were now slowly returning to their planetary system under cover of their famous screen! But we would conquer these fellows! We would land on their planets and attack them at close range when they would be unable to employ their protonic fog.

By this time our fleets had swung around on the far side of the giant binary system, and the outer planets on this side were becoming quite close. We shut off all outer lights on our machines and hastily sped towards the inner planets. Noting that the insect fleet was still at a remote distance, we circled around several of these worlds and landed our machines on five of the planets. We were met with little opposition, for all the insect defense armies seemed to have entered the war. Those few cities that offered hostilities were speedily dispatched by several well-aimed atomic torpedoes.

An hour later the insect fleet was sighted. The protonic screen was dwindling rapidly, and by the time the first rows landed on a near-by planet their protection screen had totally disappeared. Line after line came down on a number of the planets and finally the last rows of the insect fleet disappeared.

Very soon after several of the globes appeared over the horizon, coming in our direction and bristling with fiery rays. We waited only long enough to convince ourselves that these globes were not friendly. Then our rays shot forth to meet them, and several lightning bolts were sufficient to destroy our attackers. A dozen more of the insect spheres appeared on the scene, but these, too, were speedily dispatched.

Thereupon we rose swiftly into the higher atmosphere and headed around the planet in the direction from which the insect globes had come. Not an enemy met us and we continued faster. About half way around, near a large water inlet, there seemed to be a huge enemy base. Our telescopes soon confirmed this

belief. There lay a very large fleet of insect space machines at rest. We slowed down rapidly but silently until we hovered over these machines at an altitude of twenty-five miles. Taking deliberate aim, we shot down a number our our most powerful disintegration torpedoes and then moved off at increased speed. Several seconds later we saw a blinding flash, accompanied by a dense cloud of smoke and dust, from which particles went flying in every direction. We circled high above, and when the dêbris cleared a small lunar-like crater yawned at us. Not a globe was there to be seen.

No more insect globes did we meet on that planet, so we sped away and headed out for the next worlds. Two other divisions of our fleets were emerging from other planets and soon joined us. They had been successful in conquering small clusters of insect machines. Regarding the luck of the other two divisions, we were uncertain, so we hastened to the planets they had chosen.

We arrived just in time to witness a fierce battle between one of the divisions of projectiles and a vast swarm of insect globes and their caterpillar machines. Without hesitation we shot down a powerful stream of lanthanum rays and lightning bolts into the enemy lines. Their spheres came up to meet us, bristling with deadly shafts, and attempted to release a small protonic fog from their outer tubes. We battled with them for some time and eventually succeeded in defeating the devilish fiends. Eight of the Merlyrinnian projectiles were discharged when their engines were burned out with the insect rays. The occupants were transferred to other machines.

We scoured the planet for other insect spheres. Satisfied that we had defeated our enemies on this planet, we set off for the other worlds to destroy any remaining insect machines. There were very few insect globes remaining, and we had little difficulty in destroying these. We were met with practically no opposition whatsoever. Finally the last few enemy machines surrendered to us—a most unusual happening, we thought, since the insects had always fought to their very last man rather than give up, even though overwhelming defeat looked them in the face. To reassure us of no further hostilities, a number of the caterpillar machines appeared, waving white flags.

CHAPTER XX

The History of the Insects on Eta

WHEN the insects surrendered their last few space machines to us, all fighting on Eta's planets came to a definite end. The insect cities threw up all arms and welcomed us! We landed the whole of both our fleets on a vast stretch of level plains near one very large city and several hundred of us followed some insect leaders to their public gardens. A number of bird men accompanied us and, amid a deafening volley of cheers from the crowds of thousands of insects, we proceeded to a central elevated platform.

One of the insect leaders advanced to the fore, waved two arms and, after hushing the multitude, addressed a few words to them in an unknown tongue and in a shrill voice. He then motioned to us to come nearer and uttered more syllables while pointing to us with his arms. When he finished another thunderous applause broke out from the crowds, and thousands of arms waved high in the air. We bowed courteously and retreated slightly.

The crowds then dispersed with astonishing rapidity and the conference with us began. The insects talked with the bird men, who in turn translated to us what was said. We were also able to understand the insects when they talked in the bird language. The insects wished to welcome us whole-heartedly and extended the same feeling toward the birds. They claimed that this war had given them the freedom and liberation they had long desired.

For hundreds of years they had been kept in subjection by their war-like brothers, the Ikrikan insects. Always they had longed for freedom and many plans for a timely revolt were formulated. But never were they able to put such measures into force, for fear of the terribly cruel Ikrikans, who watched and directed every move.

After this Ikrikan race had subdued the milder Kerkrul insects and had almost destroyed the Gurnors (the bird men), they had turned their attention to warring on other solar systems. Huge machines were built to tear great masses out of the soil and hurl these at incredible velocities and with a very high degree of precision towards other stars. Other machines soon contrived to capture passing meteors and meteorites and project these out again. Thousands of intricate generators were made to fire powerful rays into space, and ten years later a large number of spherical space machines were built with the intention of traveling far out to conquer other planetary systems.

It was just at this time that the first retaliation from outer space began. Evidently the inhabitants of some near-by stellar system were highly advanced also and were able to return the challenge with a tremendous burst of fiery rays. These were kept up at frequent intervals for several years while the Ikrikans continued their offensive.

Then one day a large fleet of projectile-like machines were sighted through the large insect telescopes, and in a short time the challenging fleet arrived within Eta's system. The newcomers commenced a fearful war of destruction upon the planets, wiping out whole districts. The Ikrikans rushed the work on their new space globes and set out in a large fleet to fight the invader's machines. A very short war followed, in which both sides lost heavily. But the insect fleet was well armed, and after a desperate struggle they succeeded in totally destroying the other fleet.

After this alien fleet had been conquered and destroyed the Ikrikans became very confident of themselves and sent a large fleet of space globes out to some distant stellar system for no other reason than to satisfy a mad desire to fight. For several years the fleet was gone. In the meantime the ray machines and meteorite projectors were kept active, and more space spheres were being constructed, using newer and newer inventions. A few more years rolled by and then a scanty fleet of the fighting globes returned. A terrible war had arisen on one of the distant planetary systems and the Ikrikan fleet was almost wiped out of existence. Only the few surviving machines were able to escape and return to Eta.

Almost the next year a fierce fleet attacked the Etan system. The attackers had come from the star where the Ikrikan fleet had been so terribly mutilated. A fearful war now followed, in which Eta's planetary life was again threatened with extinction. Millions of Kerkruls were slain in the struggle into which their cruel Ikrikan masters had forced them. Millions upon millions of Ikrikans themselves were destroyed. But still the Ikrikan science was able to meet the demands for more powerful defensive machinery, and gradually, little by little, the enemy began to lose more heavily. Finally, after a terrible sacrifice, the Ikrikan insects succeeded in destroying the menacing enemy, although the victors had little remaining of their own space globes.

After this disastrous war the Ikrikans sent no more

fleets out to conquer other worlds. Instead they rebuilt their cities from the ruins and improved upon all their machines and instruments. The space globes that remained were used for interplanetary transportation. But the Ikrikans had not given up war yet! On the contrary, they felt all the more eager for revenge. Naturally their ill feeling fell upon the subjected Karkruls, whom they treated more cruelly than ever before. Revolts broke out all over, but were unsuccessful, and hundreds of thousands of Kerkruls were disposed of by the ray execution system.

Science was advancing by leaps and bounds and new engines of destruction were the result. Very powerful ray projectors were built which sent out deadly shafts of tremendous paralyzing intensity. These beams were directed to those solar systems which seemed most conspicuous through the telescopes, the ray projectors being aimed with the utmost degree of accuracy from all points girdling the planets. The great meteorite projection machines were again set into operation, based on the latest improvements, and other complicated apparatus was designed to even capture the erupted masses of flaming matter from the giant twin suns that lighted and heated their planets.

This was continued for years, and after a long period had passed plans were drawn up for the construction of the greatest space fleet ever built. The Ikrikans knew that sooner or later they might be attacked again, and they meant to be ready. Accordingly work was immediately commenced on the new fleet, and every available Kerkrul was enslaved in the factories and mines. The giant fleet was to require several years for completion.

Though the huge telescopes probed the skies regularly, no danger was ever reported. And yet one of the most formidable of all fighting fleets arrived within the binary system of Eta without ever being noticed or even suspected. The large Ikrikan fleet was still unfinished when word was spread that strange projectile-like space machines lay on a level plain on the sparsely populated planet Yiffcrif. These huge machines shone with a ghostly green and slightly purplish glimmer, and some peculiar two-legged, two-armed, erect beings were seen disembarking from several of the machines. The Ikrikans ordered them to be destroyed, but these strange machines proved indestructible. Soon these arose and headed for the inner planets.

The Ikrikan fleet was still in construction and the work on it was rushed. In order to save time, the old space globes were equipped with defensive instruments and sent out against the invading fleet. But these insect globes were useless against such powerful machines, and great areas on the inner planets were devastated by fearful bombs and unknown rays. (Of course, dear readers, you have probably guessed by now that this strange fleet of projectiles mentioned here in the history of the Kerkruls was none other than part of our own great fleet, headed by Jovrite, when we first arrived within Eta Cassiopeiæ.)

The next astonishing thing that happened was that the exiled Gurnors, or bird men, had somehow or other made friends with the invaders and their whole bird population (which wasn't very great) had embarked into the space projectiles. The invading fleet then spread a little more destruction, and after completely crushing the Ikrikan defense globes, retreated into outer space beyond the last planet, where the first fleet joined a very much larger fleet floating idly in interstellar space.

By this time the great Ikrikan fleet was almost completed and the first half of it was rushed into rows to form a great army. These globes then went out into space in pursuit of the strange giant fleet. A great battle ensued, in which the insect fleet lost many machines despite its victory in driving the other fleet away, while hardly a projectile was disabled in the alien rows.

Then came the tremendous war—a war of raging systems—a war of this Galactic Universe! First came the great blazing line of fiery comets, against which a great fleet of the new Ikrikan globes went to battle. Then followed the other great armies from alien astral systems to join the raging fury. The one strange projectile fleet (which was our fleet) was seen to suddenly disappear, although its terrible effects on the warring parties could well be seen. Later it reappeared as suddenly as it had vanished before.

Finally the greatest and most terrible foe of all arrived—the millions upon millions of giant termites, lined in an immense fleet of colossal extent. Every other warring system was obliged to fight the great common warrior. The interstellar war had increased to frightful proportions and the titanic scene was drifting steadily towards the Etan planetary system. Millions more of the insect globes were rushed into fleets and sent to aid in the defense. Almost every Ikrikan insect had gone to the struggle. Yet there still remained a large number of these Ikrikans on the planets, and even at this time the day was not quite ripe enough for revolt on the part of the enslaved Kerkruls.

The titanic war was raging nearer and nearer when a very large, strange fleet of projectiles joined the first similar fleet, and the two headed for the struggle. The curious maneuvers of these two brother-like fleets were watched with intense interest by the Kerkruls, in whom a growing hope arose. Then the greatest spectacle ever witnessed occurred. Immense sheets of blue-white lightning, spanning millions of miles of space, changed the whole of the raging inferno into one solid mass of whirling electricity. Within several hours the great interstellar war was no more, leaving only a few scattered Ikrikan globes and the two projectile fleets on the far side.

The remaining globes returned to their planets. But even before they arrived these two strange fleets beat them at it and landed on several of the Etan worlds. When the insect fleet returned the invaders struck at once and utterly destroyed all the Ikrikan globes. Every Ikrikan insect was called to the defense, only to be destroyed. When the Ikrikan power was no longer effective the Kerkruls revolted and gained their freedom without the slightest interference. Their independence they claimed they owed to us for conquering and dispensing with the cruel Ikrikan insect race.

Such was the history of the planetary life of Eta Cassiopeiae as told to us by the Kerkrul insect men. We could not help but feel sorry for these creatures, and we also felt that we had accomplished something worth while from our spacial journey to Eta. We had ended forever one of the most threatening dangers in destroying the Ikrikans along with the other mad systems. We had also indirectly given freedom and liberation from bondage to the Kerkruls. Even the bird men, the Gurnors, had been saved from utter extinction. From now on peace was to reign on these wonderful worlds, lighted by the magnificent twin suns of gorgeous rose-and-blue splendor.

CHAPTER XXI

Peace on Eta Cassiopeiae

IN a very short time we learned the Kerkrul language with the aid of the Gurnors. The Merlyrinnians proved as diligent as we in acquiring the new vocabulary. Great celebrations in honor of us were staged wherever we went, and we were often called

upon to address public gatherings regarding our home life. In return we learned much regarding the insect civilization, government, laws, customs, and, most important of all, sciences.

Many large cities there were on these planets and all the machines of both our fleets were scattered about, their crew enjoying the marvelous visit in one or another of the great centers of industry and learning. Of course the leaders and head scientists of both fleets kept together in the great capital city of Rilkril most of the time. Jovrite and Rajance were the "great ones," while Arakort, Rifton and others, along with Martin and me, were none the less hailed. Most important of all, Lurla was with me continually—and Martin wasn't taking any great chances on losing Nyola either!

One thing I liked better on this planet than on any in our solar system was the beautiful moonlight nights. Circling around this world (Finril, fourth from Eta) were five fairly large satellites (three being inhabited, the other two dead and devoid of an atmosphere) which shed a magnificent flood of multi-colored fairy light upon the planet by reason of their nearness and also by reason of the original beauty of the twin suns. Certainly this was the ideal land for romantic beings! We spent many moonlight nights wandering through the richly grassed hills near by—I mean Lurla and myself, although these places were frequented by more than just us two alone!

To render the enchanting scenes more beautiful under the flood of fairy light, the vegetation lent magnificent aspects. For the green and red grasses that were often as tall as a man kept giving off a continuous luminescence or cold light. This was truly remarkable, for although many insects and animals back on our own solar system possessed the power of generating cold light, or bioluminescence, and man had actually solved the secret and was making this light artificially, yet no plant or vegetation had been discovered that produced any such manifestation. Tests for radio-active elements in the grasses proved the absence of the former, although we would not expect to find such elements present unless a warm light or phosphorescence was radiated. Analysis showed that the plants contained tissues of unusual high organic activity, and the now well-known substance called "bioluminiferine" was extracted along with other interesting but queer compounds.

The mineral wealth of these planets was notable. Along rocky cliffs the minerals were very beautiful, some bespattering whole hills like a solid mass of one immense, single, glittering crystal. Some of the most exquisite gems imaginable were obtained in natural form from the mountains. One outstanding feature of these minerals was that in many instances they were composed of very rare elements unknown to us. Iron, copper, silver, gold and many of the other common metals were abundant everywhere. Silicon, aluminum and beryllium were extremely plentiful. In fact, beryllium was used with magnesium and a little tungsten for many ordinary articles where enormous strength as well as great lightness was desired.

Rifton was our chief specialist in chemistry and electricity, and he made an exhaustive study of all the elements known on these worlds.

Oxygen, hydrogen, the four halogens and other similar elements were present. There was no nitrogen, however, excepting the small amount that had been made from atomic displacement. In its place a colorless, rare, inert gas, which was called nilscrinium (atomic weight 264.6), constituted the greater part of the atmosphere. On one planet there was no free oxygen whatsoever in the atmosphere, but in its place a highly complex oxygen compound. Helium and other inert rare gases were in abundance. Mercury was indeed plentiful. Several large lakes were filled entirely with mercury! Three other metals were also found existing in a normal liquid state.

We isolated and also obtained samples of elements unknown to us, but of extremely high atomic weight. Gylsic, a reddish, gaseous, active element, had an atomic weight of 1,320! A metal belonging to the alkali group, alkonium we named it, had an atomic weight of about 800 or 805, and was so extremely violent that it could only be kept in an absolute vacuum. Placed in air, it exploded instantly with terrific power, and if placed on water atomic disruption would result! In its preparation, alkonium (Ak) was preserved by surrounding it with electromagnetic absorption coils to absorb all the energy of its molten ore. The electrolytic method was employed.

But what surprised us most were several curious metals of tremendously high density. The heaviest we found was a shining green metal called kristoral (Ks) with the high atomic weight of 8,524! It was a noble metal, evidently belonging to the platinum group, but more than 250 times the density of platinum! Just imagine a metal over 5,370 times as heavy as water! Almost unbelievable! Yet here was the proof. With all my strength I could not lift one single cubic inch of it, which weighed some 195 pounds. A liter of water weighs one kilogram, but a liter of this strange metal weighed 5,372 kgms., or almost six tons!*

During our visit we learned much about the insect sciences, besides their chemistry and electricity. We were greatly interested in the machinery and instruments in the remaining space globes, and we also examined the caterpillar machines. The great ray projectors were another source of interest, and we also marveled at the huge meteorite projection apparatus which were even capable of attracting the erupted masses from the two suns. Numerous other appliances, based on the ray or magnetic principle, were the great power plants and generators.

In physics and astronomy the insects were highly advanced. Their large telescopes were not unlike ours, excepting that the principle of electromagnification had not as yet been discovered in Eta. However, the lenses were constructed from certain crystalline compounds having a tremendous refractive index, and hence the magnification was enormous as compared with that from our own glass lenses. Some of the insect telescopes employed huge mirrors.

The buildings and houses were built of many beautiful crystalline rocks and the cities were like solid masses of sparkling gems with their crystal palaces and streets. The lovely colored light from the twin suns, together with their modified combinations, lent a fairy radiance to the scenes. At night the various cities gleamed forth in glistening splendor from the countless millions of multi-colored lamp tubes in their crystalline surroundings. Truly, the insect cities were beautiful!

CHAPTER XXII

The Return to Our Solar System

WE spent about two months on those planets of Eta Cassiopeiae. In that time we learned all there was to know about life and civilization on those worlds, learned all the Kerkrul insects taught us. All the while we collected specimens and samples of everything we found strange, and by the time we were ready to depart our space machines were fairly well

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* More exactly, 5.92 tons. For simplicity all weights are given for terrestrial gravity. These weights deviated somewhat on some of the Etan planets, although on one or two, gravity was very nearly the same as terrestrial.

The two men fitted a contrivance that looked like a diver's helmet over Jim's head, then carefully lifted and placed him in the tank of salt solution . . .

GRAFTING foreign parts to the human body to replace defective parts, is no more in the class of "impossible"; that is, within certain limits of grafting. Not much, if anything, has thus far been done in the way of replacing the essential organs within the human system. But as mechanical and electrical science gain, so also will medical science, which often depends on the others. Our new author gives us, in this story, a very human angle of scientific possibilities and development, which is exceedingly interesting and thought-provoking.

The Mechanical Heart

By H. I. Barrett

DR. WENTWORTH sympathetically shook his grizzled head as he laid the stethoscope on the table.

"Jim," he said, "you have asked me for the truth; if I didn't know your character so well I wouldn't tell you—Jim, you may live three months—and you may live only five minutes; that heart is going to stop mighty sudden."

Jim Bard's blue eyes stared unseeingly at a pictured skeleton hanging on the wall. When he spoke, his voice was vibrant with an intense earnestness.

"Doctor, I am not afraid to die—I am even curious to know what comes next—but I must live till the telephoto device is completed. I've been at it five years now and it has come to mean more than life to me; it is my life's ideal; the fulfillment of the purpose of my living in this world. God! Doctor, I can't die—yet. There must be some way?"

"Jimmie," the old doctor laid a kindly hand on the young man's shoulder, "I'd give my right hand to help you. I know what that telephoto means to you, and I can realize what it would mean to the world—but I can do nothing, and medical science can do nothing. All I can say is, take life easy, eat lightly and quit smoking—and get your affairs in the shape in which you wish to leave them. Jim, you are a scientist and have no sentimental misconceptions of life or I would not have told you this."

The two men shook hands as only two men with a perfect understanding can, and Jim left.

Jim entered the door of his small laboratory and greeted his assistant, a dynamic little man, whose apprenticeship had been served in a Switzerland watch factory, where precision had been a religion.

"Hello, Henry, making any headway?"

"No. Nothin' but trouble, trouble, trouble with these damn selenium cells."

The little man gesticulated violently as he spoke, and Jim, as always when listening to him, repressed a smile with difficulty.

"Had some bad news this morning, Henry."

"What?"

"Wentworth says I'm going to die one of these days—that the old heart is going to quit pumping."

"Put new valves in it," said Henry sourly. "Who's Wentworth, anyway?"

"Wentworth! You haven't heard of him? Why, he's the wizard of the medical profession—what he says is gospel. Brought me into the world when he was the 'struggling young physician' back in Iowa."

"Yeah? Well, if he's so great, why don't you have him graft a heart into you—they graft everything else?"

"Will you donate the heart, Henry? I'm afraid a monkey's wouldn't work."

"Get a goat's," said Henry acidly, "that would fit better. Better yet, make one—you ought to be able to do that. I've heard it noised about that you are the coming inventor of the age."

"At that," said Jim, "it doesn't sound more impossible than the telephoto did five years ago. But let's quit this foolishness, Henry, and get to work on that cell."

The two men walked to their respective benches and were soon concentrated in their work. For an hour all was quiet in the laboratory, then Henry looked up and called to Jim:

"Say, Mr. Bard, I wish you would see what you can do with this mechanical heart."

"What?" asked Jim in surprise. "What do you mean, 'mechanical heart'?"

The little man flushed, then stammered, "Mech—mech—I mean selenium cell."

"What made you say 'mechanical heart'?" insisted Jim.

"Aw," exclaimed Henry, disgustedly, "I've been seeing some crazy sort of contraption strapped to your chest and pumping your blood."

"The only way," said Jim, "to get that kind of bug out of your head is to take a pencil and paper and draw a plan of it—the heart, not the bug—to show that kinky part of your brain how crazy it is. At least I'm that way, I'll get a crazy idea of something and if I don't try to work it out, it will run through my mind for weeks. I want your mind clear tomorrow, so play with your blood-pump for awhile."

"Bah!" spat out Henry. Then wiping his hands on his immaculate overalls, he again bent studiously over his bench.

IT was getting dark when Jim called, "Let's go eat—it's way past quitting time."

He received no answer; nor did the other look up. Curious, Jim walked to the little man's bench and looked over his shoulder. He smiled as he gazed at the penciled lines that so engrossed Henry; then, as his expert eyes took in the details, the smile gave way to an interested look; he leaned closer and studied the outline intently. Suddenly, he put a finger on the paper and spoke—the little man jumped.

"You'll have to have a vacuum to suck the blood back through the veins as well as a plunger to force it through the arteries."

Henry looked up guiltily and blushed like a school girl. He muttered something under his breath and started to crumple the drawing. Jim calmly took it from him and straightened it out again.

"Hmmm," said Jim, scanning the lines. "How many cubic inches per minute does the heart pump, anyway?"

"Dunno."

"Well, then, tell me the pressure of the blood as it leaves the heart."

"Dunno."

Just then the door of the laboratory opened and Dr. Wentworth walked in.

"Hello," he called cheerily, "I didn't know whether or not you were here, there was no light."

"Dr. Wentworth," shouted Jim, "just the man I wanted to see. Turn on the lights, Henry. Say, Doctor, what's the pressure of the blood as it leaves the heart—how many cubic inches per minute does the heart pump—what are the diameters of the arteries and veins—what—?"

"Hold on, hold on," laughed the doctor. "We'll have a traffic jam here in a minute. Now—one at a time, and slow."

As the doctor answered his questions, Jim made notes on a paper.

"What in the world, Jim," asked the doctor curiously, "are you going to do with all that information?"

"*I'm* not going to do anything with it," answered Jim. "Henry, here, is making me a mechanical heart, so when mine quits he can attach it; so you see he had to know all those things."

"I am not!" shouted Henry, red in the face. "I quit and he took it up."

Jim winked at the doctor. "Henry," he said, "you have always prided yourself on finishing what you started, are you going to lie down on a little thing like a mechanical heart?"

"No," exploded the little man, "I'm not—I'm going to make the damn thing if it takes the rest of my life—and you're going to wear it if I have to cut out your heart and put it in, myself."

He wrathfully grabbed a bunch of papers, took his hat from a nail and smashed it on his head and went outdoors, slamming the door behind.

"Fiery tempered little devil, that," observed the doctor amusedly.

"Sure is," answered Jim, "and stubborner than a Missouri jackass—but he's the best mechanic I've ever seen."

"What," asked the doctor, "is all the noise about a mechanical heart?"

Jim laughed, "Oh—Henry, with that streak of insanity possessed by all geniuses, is obsessed with the idea of me wearing some sort of machine to pump my blood; he couldn't get the picture from his mind, so I told him to work on it awhile—but you know, doctor," he continued more seriously, "that rough plan he drew didn't look so preposterous as it sounded when described."

"Careful, Jim," warned the doctor, "you'll be as bad as you say the little fellow is, first thing you know."

"No danger of that, doctor," smiled Jim. "But, say, just to satisfy my idle curiosity, what would be the effect on a man if the nerves to his heart were severed and yet his heart kept beating?"

"Hmm-mmm," answered the doctor, thoughtfully. "In the first place, such a case would be quite impossible—no heart could continue beating with the nerves severed; but taking a hypothetical case and admitting anything possible, I would say a man would be a sort of an automaton; he would breathe, eat, sleep—in fact, take care of all the necessities of living—and I guess he could think to some extent."

"Wouldn't he find," asked Jim, "that while his heart was pumping at the normal rate of seventy-two beats per minute that his emotions would be purely mental—that is, they would not affect him physically in the slightest? As I remember my physiology, there must be accelerated heart action before any emotion can affect the nerves or muscles; and with no nerves to the heart, there could be no accelerated action in this case."

The doctor studied a moment. "Yes, Jim, I believe you are right. Take any of the emotions such as hate, fear, anger, love; they are, in their incipiency, mere thoughts or ideas in the brain; the brain nerves transfer these impulses to the heart, which becomes accelerated, and then the body muscles and their nerves are affected—but say, I didn't stop in for a conference on biology, I'd rather hear about the telephoto; how's it coming?"

"Slow, doctor, I can't get the receiving set to take the pictures properly—and I hate to admit it, but I seem to have lost most of my ambition since you told me I haven't long to live."

"My boy," said the doctor, with a paternal kindness in his voice, "that isn't the right attitude—and I'm surprised that you, of all people, should take it."

"I know that," admitted Jim sheepishly. "My idea has always been that if a man works till he dies, then—and only then—has he accomplished what the Lord put him here for; but now, the telephoto means more to me than just working till I die—I want to finish it, and if I can't, what's the use of working?"

The doctor smiled. "Jim, as your physician, I prescribe that you go home, go to bed and sleep for at least ten hours, you are totally exhausted."

"Guess you're right," admitted Jim, then, "Say could you hook up a properly constructed mechanical heart to the body?"

The doctor picked up his hat and gloves and said:

"I'm going to leave you before you get completely delirious. Good night, Jim."

JIM followed the doctor's directions; he turned out the lights in the laboratory, went home and to bed, with no dinner. But he could not sleep. Each time he closed his eyes there floated into his consciousness the diagram of Henry's mechanical heart; platinum plated steel plunger, iridium valves, selenoid wound with silver wire. Basically, thought Jim, the little man's idea was good, but he had overlooked some of the most important parts. Finally, he went to sleep and dreamed of an enormous machine clamped to his breast and pulsing the blood through his arteries with titanic force.

Early next morning Jim went to the laboratory. Henry was already there, bent over his bench in deep concentration. Without a word, Jim went to his own bench and started working on the telephoto projector. He found it impossible to concentrate. Everything was a compact, little machine that pumped, pumped, pumped. He picked up a pencil and started idly tracing lines. Hours later he startled the little man across the room with his loud shout:

"I've got it—I've got it!"

"You sound like you had it, all right," said Henry crossly. "What have you got, measles or delirium tremens?"

Jim grabbed a paper and ran to the other's bench.

"Here," he pointed, "is the engine that will run your mechanical heart."

Henry looked at the drawing glumly, then disgustedly crumpled the paper on which he had been working.

"Hell," he snorted, "I've been working on the damn thing all night and couldn't even get a good start."

"Say," said Jim, suddenly, "let's make this machine; what do you say?"

Interest gleamed in Henry's eyes. "Uhuh," he grunted, "we'll all be crazy together."

"You get the things together," said Jim, "I'm going to take this plan to Wentworth; the thing has to be installed, you know; and he is the only man living who could perform such an operation; but by all that's holy, if *he* won't, *you'll* have to install it—that thing will work."

Wentworth snorted derisively when Jim showed him the plan.

"Heavens, Jim, you're crazy as a loon! Come, wake up, man, you know that's preposterous."

"Look at it, doctor," pleaded Jim, "I'll stake my soul that it will work."

"Well," replied the other, "there's no harm in looking—but I tell you frankly, Jim, there's no use in it. I can never be convinced."

Jim started pointing out the different parts and explaining them to the other. The doctor listened patiently a few minutes, then interrupted:

"I'm not mechanic enough to make heads or tails out of what you are saying; it's all Greek to me."

"Very well," answered Jim, picking up the paper, "I'll make the machine and demonstrate it to you."

"For Lord's sake, Jim," exclaimed the doctor, irritably, "have done with that foolishness; there's not a doctor in the world will have anything to do with that hare-brained idea."

"I'm going to make the machine and someone's going to install it, doctor or no doctor," said Jim stubbornly, as he rose to leave.

The next two weeks were busy ones for Jim and his assistant. From daylight till dark, and sometimes all night till Hilda, the Swedish scrub maid, lumbered along in the early morning hours, they worked; calculating to an infinite detail; measuring with delicate precision; standing for hours at the humming lathe; scarcely taking time to eat; sleeping only when exhaustion claimed them. And at last the heart was built. It stood on the bench, a shiny little thing of mechanical perfection.

Jim packed the heart and a circulatory system he had made of glass tubes, in a small suit-case and went to Dr. Wentworth's office. A look of comic dismay crossed the doctor's face as Jim unpacked the paraphernalia.

"Humph," said the doctor, "if that thing's a heart, I'm a hen's gizzard!"

Jim paid no attention to his remark. "These tubes," he explained, "are an artificial circulatory system; as soon as I get them together, I'll show you the heart in action."

He soon had everything hooked up and started the little machine. The only sound it made was a "tick" like that of a watch. A thick, red fluid pulsed through the tubes evenly.

"Here," said Jim, "is the selenoid; it is wound with silver wire. This steel plunger is silver plated—the valves are iridium. These steel hair-springs close the valves. Pivots for the armature are all jeweled. In pushing the fluid forward, it creates a vacuum that sucks also. If it gets seventy-two impulses a minute, it will pump for twenty years without attention—the whole thing is to be inclosed in this small platinum case. This other small case is to be carried in my pocket; it contains two six-volt flashlight batteries and the impulse machine—which is nothing but a watch arranged to give the proper number of impulses per minute. When the whole thing is attached to my body, all I must do to live is to wind the watch each day and renew the batteries when needed."

There was silence as Jim finished, a moment and he again spoke.

"When will you perform the operation, Doctor?"

"Never!" answered Wentworth; then he continued, "Jimmie, you have built an exquisite little machine, and I can see that it might work if it were connected to a human system, but that operation is impossible. Why, man, not even the coldest blooded doctor in the world would attempt to remove a human heart; it would mean almost instant death to the patient—one little bubble of air in the blood might be enough to produce death, and air most certainly would get in; such an experiment is against the laws of this country and the surgeon performing it would most certainly find himself in the penitentiary for the rest of his life—be fair, Jimmie, look at it from a sane standpoint."

"Doctor," Jim's voice was vibrant with passion, "I can look at it from no standpoint except that it is my only chance of life—my only chance to finish the telephoto. You say I can live only a short time anyway, and a few days living is not worth more than even one chance in a million to prolong my life. Perform the operation in secret, if you are afraid of the penitentiary, and if the outcome is fatal, you can doctor the death certificate—it's done every day of the year, and you know it. As for the bubble of air getting into the blood, I can remedy that; I will fix up a tank of salt solution and you can perform the operation under that—no chance, then, for air to get in. Doctor, for God's sake forget the individual and think of the boon to humanity, should it work. At the worst we are losing a few days only of my life; at the best we are freeing humanity from one of its greatest evils. Doctor, you are an honest man, a just man, a brave man, you can only say, 'Yes.'"

The doctor had risen and was pacing restlessly to and fro. He stopped at the window and peered far down at the busy street. Suddenly, he turned, his face pale and set.

"Jimmie," he said simply, "you win."

ONE week later Jim Bard, Doctor Wentworth and Henry stood in Jim's laboratory before a glass tank full of salt water. Jim, calm and unhurried, was undressing. The doctor, with a bluff professional manner, was arraying sharp steel instruments on a small table; his features, set in a smile, looked as if they would shatter at a twitch of a muscle. Henry, his black eyes glittering strangely, was glancing from Jim to a long, thin knife that lay on one edge of the doctor's table.

Jim finished undressing and lay down on a carefully spread cot bed. The doctor picked up an ether mask and adjusted it over his face.

"Well, Jim," said the doctor, "when you waken, you will be the only man living who has an artificial vital organ."

"You mean," said Henry sourly, "*if* he wakens."

The doctor sat down by Jim's side and took hold of a wrist. Jim's breath came slower and slower, soon his muscles relaxed. A few minutes elapsed and the doctor spoke to Henry:

"He is asleep; are you ready, sir?"

The two men fitted a contrivance that looked like a

diver's helmet over Jim's head, then carefully lifted and placed him in the tank of salt solution. A great battery of lights above the tank was switched on. The doctor selected an instrument, bent over the tank and plunged his hands down to Jim's body. Henry stood by, his rubber-gloved hands holding a tray on which lay a tiny, bright, metal device from which two wires extended.

Thirty minutes later the doctor and Henry, their faces red and strained, clothing glued to their bodies with perspiration, lifted the inert body from the tank and placed it again on the cot. They rubbed it briskly with coarse towels, then wrapped it in woolen blankets.

Tick, tick, tick, tick. The figure on the cot stirred slightly.

"He's waking!" came a whisper from the doctor, who was holding the patient's wrist. "And he's going to live—live as long as the machine works. It's a miracle—the miracle of the ages."

"Course he is," said Henry. "That machine had to work; it was perfect."

Jim slowly opened his eyes and looked around drunkenly.

"H'lo evr'budy," he mumbled. "Wha's all th' racket about?' His eyes fell on Henry. "Is the telephoto all righ'?"

Henry nodded his head in the affirmative and slightly turned the knob on the battery box which lay on the bed. Jim fell into a deep sleep. He awakened later, able to converse intelligibly.

"So it worked—and I'm alive," Jim said weakly to the two figures standing over him, "and now I can finish the telephoto—oh, God! I am glad. Say, this contraption makes an awful noise; I can feel it jarring my whole body. How long before I can get up, Doctor?"

"Two weeks."

"Two weeks! Say, I'll rot alive if I have to stay here that long."

The others left and he again fell into a deep sleep. After many hours he awakened. Henry, who had returned in the meantime, brought broth, and Jim ate heartily.

"So," thought Jim, "I am alive, and can eat." He could feel the blood coursing strongly through his veins. That metallic "tick" was bothersome, but he'd soon get used to it. Curiously, he fingered the battery box; his fingers strayed to the accelerator, pushed it. Weak as he was, he almost jumped out of bed. Blood surged madly through arteries unaccustomed to such strains; his temples pounded; and his whole body jerked to the beat of the mechanical heart. Quickly, he pulled the button back, and breathed a sigh of relief as the blood resumed its normal rate of flow. Have to be careful or he'd have himself cutting all sorts of didoes.

The days seemed endless to Jim as he lay waiting the time when he again could work on his life's achievement, the telephoto. Were it not for the doctor who visited him several times a day, the inaction would have been unbearable, for Henry, outside of taking care of his physical necessities, winding the impulse watch and changing the batteries, paid him no attention.

One day the kindly old doctor placed a hand on Jim's shoulder and said:

"Jim, I'm going to let you up tomorrow if you promise to be careful and follow directions implicitly."

Jim promised. Next day he was up. He soon became accustomed to the little machine clamped to his chest and to the weight of the batteries in his pocket. But the batteries and watch bumped into everything, so he had a special vest made in which to carry them. Two weeks and he was working on the telephoto. All his waking moments were spent in the laboratory, where he threw his whole mind into completing the instrument. But he was still weak and could not get into the work with the same spirit he had had in the past. Wondering what heart acceleration would do to his present state of mind, he edged the button forward; immediately he found it possible to concentrate, and plunged into details with a vigor that was astounding.

EVERY night, and far into the morning he worked at the telephoto device in one corner of the laboratory. He found that when exhaustion was on the point of overcoming his body, a slight push on the knob put new life into lagging muscles and stimulated his mind to greater activity. One night he became so engrossed in his work that he forgot to go home at all. Night passed and dawn's gray light peeped into the windows, throwing outlines into cold relief. Hilda, the Swedish scrub-maid, came into the room, carrying bucket and mop. Many times she had walked in on the concentrating Jim, so neither was surprised.

"Hallo, Mizter Bard."

"Morning, Hilda."

"It bane awful swell mornin', ain't it Mizter Bard?"

"Sure is, Hilda."

The text of one of his conversations with the doctor flashed into his mind. "Hate, fear, love, anger will be mere thoughts till the accelerator button is pushed forward, then those emotions will grip you physically." Here was a chance to test that theory.

With all his will, Jim concentrated on the thought of love for Hilda—and slowly pushed the button forward. His face grew hot and a warm glow enveloped his body. The button went another notch. Blood became sparkling wine and sang through veins; strange, delightful thrills wrestled in his stomach; breath came short and fast.

"Hilda—Hilda!" he breathed softly.

She came swiftly to his side.

"Vot's der madder, Mizter Bard, is you sick?"

"Hilda, girl—Hilda" In a panic he tried to pull the button back. It would not come. He jerked frantically, but the button was stuck—caught in the vest.

"Hilda, sweetheart, how I have longed and waited for you. Life has been one, long night of black despair without you, girl."

"Mizter Bard! You is jokin' of me."

"No, no, Hilda, I am more serious than I have ever been before."

For a second his mind again flashed clear. Vainly, he tugged at the unyielding button. A yearning that would not be denied brought him to his feet. His hot, dry hands slid up her chubby arms and into rolled sleeves.

"Mizter Bard," she squeaked. Her dead, gray eyes peered at him in alarm, and her calloused hands thrust him back.

"Hey, Mr. Bard, are you here?"

Quickly, Jim turned. "What the hell are you doing here, Henry?" Jim's voice was thick with passion. "Get out before I throw you out—you cur."

"Der man is crazy, Mizter Henry, he is try to make funny of my infections."

Jim advanced threateningly on Henry.

"What's the matter, Mr. Bard?" Henry's voice was shaky.

"I'll show you what's the matter," grated Jim, as he grabbed the little man. His strength was a terrible thing to behold as he jerked Henry off the floor. But Henry's mind hadn't undergone years of training for naught; quick as thought he reached in the front of Jim's coat, caught hold of one of the wires to the battery, jerked it upward—one end of the wire came free. A pained, startled look twitched Jim's features; his body sprung taut—quivered—slumped to the floor. A bluish tinge spread over his face; his breath rattled.

Quickly, Henry fastened the loose wire to the battery terminal—meanwhile unfastening the accelerator button from the tangled vest. Jim breathed easily again and his face resumed its normal hue. He rose with a sickly smile.

"That was a close scratch, Henry. You sure used your head."

Then turning to Hilda, who stood with open mouth:

"I'm sorry, Hilda, I was very sick—temporarily insane—heart trouble, you know. You don't need to finish cleaning this morning."

"Bet chur life, A don't. A ain't never goin' t' clean here no more—A ain't goin' t' work round' no crazy heart troubler." With which she flounced out the door.

The telephoto was nearing completion. The sending set was done and the two men were working feverishly on the last detail of the receiver. Their eyes were red-rimmed from sleeplessness and their hands trembled. Jim finished tightening the last bolt.

"Henry," he said, "let's try it—you take the sending set; I'll receive."

The set did not work at first and they tinkered with it for some time, then tried it again. Ten minutes later Jim jumped with an intoxicated:

"She's workin', Henry, she's workin'!"

Henry came running the length of the room.

"Does it show plain—could you hear me?"

"Yes, I could see and hear you as plain as if I could touch you. Henry, it's done; it works perfectly."

Jim sat down weakly. "God, Henry, this is the happiest moment of my life—I'm so happy, I could die."

"Hello, everybody," called a cheery voice, "did some one die or are they tears of inebriety?"

Both men looked up and shouted at the same time, "It works, Doctor, it works!"

"You don't say so—my, isn't that nice; what's it working at—how long has it been working—do you think it will continue?"

"Yes, it just started; and it will," answered Jim.

"What is it that's working?"

"The telephoto," answered Jim.

"Yeah," shouted Henry, "he could see an' hear me like I was here."

"Where were you?" asked the doctor.

"Here," answered Henry. "That is, I was in the other end of the room."

"Jimmie," the doctor's eyes shone with an honest gladness, "I knew you would do it. Any man with your determination is bound to succeed—let me see it work."

The doctor sat for an hour, entranced with the wonder of the machine; watching the lifelike images of both Jim and Henry, and listening to their voices.

Finally the doctor asked:

"When are you going to give a public demonstration, Jim?"

"First of next week—at the Associated Scientists' convention."

"Fine," exclaimed the doctor, "I'm going to be there, too. Makes me think, I stopped in to see if you'd come down to that same meeting; I want to show them that heart of yours. It will be the surprise of their lives. Boy, with that heart and this television machine, you will certainly set that convention on fire. What are you going to broadcast?"

"I have," said Jim, "made arrangements with the Hippodrome in New York to broadcast their latest play. I'm going to send Henry there with the sending set. I'll have the receiving set on the stage in the auditorium, throw the pictures on a screen and use an amplifier for the voices."

"I must go now," said the doctor. "Probably won't get a chance to see you before the big party—say, I'll drop down here a little early and we'll go together, eh?"

"Fine," answered Jim.

The doctor left.

MONDAY night Dr. Wentworth led Jim into the great auditorium. Every seat in the big room was full, and men were standing packed in every aisle. A blue haze of tobacco smoke hung low over the multitude of heads, and the hum of conversation filled the room.

The doctor led Jim straight to the platform. They mounted the steps. The doctor spoke to an official-looking man there, then turned to the audience and announced:

"Gentlemen, I have with me tonight the greatest inventor the world has ever known—the inventor of the mechanical heart. Some time ago I told him—his name is James Bard—that he had only a short time to live; his heart had been bad from birth and was likely to stop any minute. He had a stronger determination to live than I had ever witnessed. Gentlemen, he invented himself a mechanical heart—it is now pumping the blood that is keeping him alive. I will let him explain it. Mr. Bard is also the inventor of the telephoto—just completed it last week. He is going to demonstrate it to us tonight."

A strained, expectant silence hung over the room. Jim knew he was expected to say something—and that's all he did know; his mind was blank. He rose, trembling. Seconds passed. A cold sweat broke out on his body. The sea of upturned faces reeled dizzily before him. He tried to focus his eyes on some single face, but could not. He became aware of a slow, even pounding on his breast—the accelerater! Why hadn't he thought of it before—his nervous system could not act from lack of circulatory stimulant. He pushed the knob. A warm glow stole over him and his mind cleared at once; multitudes of ideas thronged his brain.

"Gentlemen," he spoke simply, "my assistant and I made this heart—any mechanic could do that; it presented few difficulties. The miracle is that any man could connect it with the human system. With a skill and courage never before equaled, Dr. Wentworth did that. I give homage to the greatest man of all time, Dr. Wentworth."

Jim's hand had remained on the knob. In the excitement of a new conquest he pushed the button far down. His voice rose loud, clear.

"Gentlemen, all my life I have striven for a goal. Until five years ago I did not know what that goal was—it was merely a vague ideal. Five years ago I started working on some instrument that would transfer and reproduce sight and sound. It became my life—more than life. Had it not been for Doctor Wentworth, I would have died with this uncompleted—that would have been Hell, a more damnable Hell than fiends could invent. Dr. Wentworth has saved me from that torture—to him I owe my all. It is now eight minutes after ten; in five minutes my assistant at the Hippodrome in New York will broadcast, word for word and act for act, the show now playing there. The pictures I will throw on the screen, the words you will hear."

Jim spent the next five minutes setting up the machine. When it was together he connected the "A" batteries, the "B" batteries—the "C" batteries—they were not there! Frantically, he searched the case again and again. The "C" batteries were missing. His watch pointed eight-fifteen. Six volts of electricity for thirty minutes—he had to have it. Was he doomed to failure on the very eve of success? Vainly, his mind raced; the light current; wouldn't work, it was alternating current; no radio batteries around; would take too long to disconnect one from an automobile.

Tick, tick, tick, tick. The strong, even beating of

his mechanical heart forced itself into his consciousness —the flashlight batteries in his vest! They would run it for awhile.

Quickly he grabbed the "C" battery wires from the telephoto, fastened them with the other wires to the batteries in his vest—threw out a switch. The room plunged into sudden darkness. A picture flashed on the screen—it was Henry—he spoke. Other pictures shown —voices sounded as if coming from the platform.

Jim's heart beat furiously and he felt a strange vibration in the impulse watch. He realized there was too much strain on it and it was running wild.

But the pictures must go on.

Picture after picture showed; figures moved, spoke with the lifelike realism. A faint, vibrating rattle filled the room. Smoke could be smelled. Pictures faded, disappeared. Voices stopped. The rattle grew louder.

"Lights!" shouted a voice in the gloom.

The room was flooded with light. A still figure lay on the platform. Dr. Wentworth rushed to it—bent over it. He straightened. Tears sprang to his eyes.

"Gentlemen," he announced quietly, "the purpose of Jim Bard's life has been fulfilled."

THE END.

This Mechanical Age

Unbounded Range

Sits in the conning tower a tyrant stern
Whose fiats issue and eventuate
In wonders, revolutions, that should sate
Those most enamoured of advance. We turn
With languid touch our journal's page—and learn
Of mountains razed, seas vanquished, that the great
Canute could not halt nor intimidate.

Marveling incompetents stand all aghast,
Genius retrieves the failures of the past.
We mate the condor, wing and wing. The air
Waits on our lightest whisper. Everywhere
News of fresh victories, of astounding change,
Challenge belief—hint man's unbounded range.

His Engine Wins

Man grown fastidious will not soil his hands;
He dreams—and rears a creature that will dig
A channel for the Colorado, big
With spring's dread influx from the skyward lands.
Man will not fetch and carry; he commands
Monsters that bear his burdens; the frail gig,
The shallop—gone! His engine wins. He'll rig
Bridles for every force—burn deep his brands.

No atom can elude his search, no world
Stagger his outlook, baffle measurement.
He knows Antares' cycle, and the tent
Of silk wherein a baby worm lies curled.
The cosmos yields before his How and Why.
He jests at fate—he questions the Most High.

—*Julia Boynton Green*

Paladins of the Sky

By Warwick Janus

IT was at 9:45 o'clock on the morning of the twenty-first of August, 2000, that the Naval Fleet of Eurasia first sighted the Airyal Defence of the Americas high above the Pacific, two thousand miles out of San Francisco. It was to be a battle to the end. It was to be decided whether or no the world would be ruled by the Executive Director of Eurasia. When the sun went down that night America would know her fate; she would know whether she was slave or defensive victor, for in this one Eurasian fleet of six hundred airyal destroyers lay the Eurasian Director's hope of utter and complete world domination.

It was in 1945 that the first of a chain of remarkable events had occurred to bring about the situation with which the world was confronted in this year of 2000. In this year the world had been astounded by the overwhelming defeat suffered by invading German, French, and English armies at the hands of the military of the United States of Soviet Russia.

"For the benefit of all humanity," the press of the Western World had called the movement of the invaders into the seemingly supreme derelict of statecraft that was then the Russian nation. Never had opposition to invasion arisen so suddenly—never so apparently in the manner of a miracle. As the armies of the invaders had neared Moscow, the Russian Air Force, antiquated for the most part, but far larger than expected, had wreaked deadly havoc in the temporary camps of the former. To protect their now imperiled country mir* after mir had marched in its entirety to the capital. Here was no bestial or ignorant nation, ruled by a queen who was hypnotized by a fanatical monk, such as that encountered by the German von Hindenburg in the first War of Nations. Here were men moved to protect their ideal until the last young Slav should fall dauntlessly before the red-decked sleeping-place of Lenin, father of a patriotism of which the Coalition had never dreamed.

Three times the Foreign Legions of France and England, that fight as though they were fiends incarnate, because they fight without hope, had been hurled against Moscow in vanguard attack. Three times they had been repulsed, each time with terrible losses. That had been in the bleak November of the Russian winter. Now, in December, the newly formed Chinese Nations had joined the Soviet in repelling the invaders. Toward the last of the same month India had declared herself entirely independent of Britain and had added a million Hindus to the three millions of Chinese already on the western battle front.

In January, 1946, the Slavs and their Asiatic allies had actually taken the offensive. Fighting more successfully from the air than the enemy, they had caused a costly retreat on the part of the allies of the Western Coalition. It was in this same month that Pogon Lonklos, father of the Executive Director II, had come to the fore. Originally a Greek communist, he had come to Russia in 1935. He had risen high in the councils of the Soviet and became virtual dictator of Russia at the time of the invasion. In the hostile action on the part of the Western Powers he had seen the opportunity to weld the crumbling state into a nation once again, this time far stronger than ever before. He had demonstrated his ability by garrisoning Moscow immediately with an army of a million mirmen to meet the invaders.

And it was through the superlative execution of impossible plans that Pogon Lonklos had swept through Germany, France, and England during the next five years, claiming soon thereafter the whole of Europe, Africa, and Asia as his domain, had set up an effective war government, established sound, economic unity and independence, and prepared for war with the Americas. This, in a period of fifteen years! He had shifted the seat of Eurasian governmental activities to Asia in 1960, owing to the many superior advantages offered by that continent. In 1961, the Eurasian Council, consisting of the four highest members of the Army, elected him the Executive Director for life. Upon his death in 1980 his only son, Suyd Lonklos, a youth of twenty years, was elected to the same high office, and no less ambitious than his parent, nor any less able, he busied himself in preparation for the coming war with the Americas. About him he gathered a school of scientists more formidable, more imposing than any heretofore seen. The Universities of Heidelberg, Berlin, Paris, Oxford, and countless other institutions were drained of their best physicists, chemists, and doctors of medicine to make Eurasian victory a certainty, as far as mechanical efficiency could make it so.

In Peking, in Tokio, and in Calcutta were erected the great factories for the manufacture of the fleet of airyal destroyers, which would play such an important rôle in the planned destruction of the metropolises of the American continent. Each destroyer was seven hundred feet in length. They were the most invulnerable and massive craft ever designed for sky combat and raid. Though the time required to prepare one was much greater than that required for the preparation of any craft heretofore built, their superiorities were manifold. With a single vessel of this type a century before a man could have made himself master of the world. Everything was being worked out with the efficient rapidity that only Lonklos could inspire.

And what of the Americas?

It was in 1962 that the United States of South America had made its appearance in the pages of world history. It had been an inevitable evolution in the political. The Latin mind had finally foreseen that the last stronghold of democracy would be in the New World. It was a democracy that was not perhaps any criterion of what world government should be, but at the same time, compared to the untrammeled despotism of Lonklos and his son, it was a thing of salvation to men and therefore a thing to be fought for.

TWENTY years later had come the alliance between the Americas "for the sake of humanity and the ideals and hopes of social democracy!" And Americas, united, began to prepare. It was not the process of deadly methodical preparation engaged in by the Eurasians under the direction of the Council of War. It was

*A Russian village community.

a more composed preparation, the preparation of a people in whom has been developed the psychology of defeat, even before the commencement of hostilities, but it was a preparation of those who have determined to fight for the right until the end. If it is possible to comprehend, it might be described as a breaking down of morale, a recognition of the spirit of defeat, yet which was of no avail to weaken the determination of the people to fight until the end.

In 1998 the severing of all diplomatic relations between the provisional protective government of the Americas and the Eurasian government, upon the recommendation of Eurasia, had served America notice that Eurasia was about to declare war. The Manifesto to the American Council for Defence had been radiocast on New Year's Day. 2000:

Calcutta, January 1, 2000.

American Councillors:

Since the body of which you are members has at this time supreme authority in the affairs of your two nations, to you this Manifesto from the Eurasian War Council is addressed.

In a meeting held by this Council on the twenty-ninth of December, the following conclusions were reached:

North America aided and abetted the Armies of Invasion in the attack in 1945 upon Russia, out of which country our nation has arisen.

The American theory of the state and the Eurasian theory are totally at variance.

The unwillingness of America to co-operate with Eurasia has been an insuperable obstacle to the development of the highest standards of world efficiency.

Having resolved thus, the Eurasian Nation extends to the American Nation the following ultimatum: If by midnight of the eighteenth of August of this year the American Nation has not signified its willingness to merge with Eurasia, the Eurasian Nation may be considered at war with the American Nation directly thereafter.

(Signed) SUYD LONKLOS,
President of the Eurasian Council for War
and Director of Eurasia.

The American people had issued no answer of defiance. They had simply continued to work. Every able man was assigned to some defence task. The defensive armies began to take shape, and the factories for the manufacture of airyal craft at Jersey City, Chicago, Rio, Lima, and San Francisco were working at capacity night and day.

The island of Manhattan, a part of the great City of New York which now extended in an unbroken chain of communities from what had been Boston on the Northeast to the former Washington on the South, and claimed an average one hundred miles of inland width along the coast, had been chosen as the military stronghold of the two nations—chosen because nature and science had contrived to make it the most invulnerable area upon the continent. On the evening of the eighteenth of August, in a small room on the twenty-fourth floor of Building A38t of the Third Abovecrust Level, there sat the chief officers in the American Army, the Defence Council for the Americas. They were an imposing group, these five, in their regulation duck suits. Only the small gold insignia each wore upon his left sleeve distinguished them from one another or from those they commanded. There was Arturos Ralo, the dark young Latin, Commander of Landing Forces; Jon Larson, the honest Dane who was now in his ninetieth year, descended from sturdy immigrant stock, Director of Electrical Onslaught; William Minton, Commander of Protective Forces; Chan Mo Harasaki, the California yellowman, aide to the Commander-in-Chief; and Roger Helman, Commander-in-Chief of all forces for defence of the Americas. Good men and true they were. Faces all that evinced no uncertainty, because they were faces that were brave. Five splendid repositories of the hopes and fears of the American people.

It was seven o'clock of the evening as the last War Council previous to the commencement of hostilities convened. As the dusk descended the teleglo power station for the vicinity dispatched a more intense gradation of artificial light.

The Commander Helman sat at the head of the table. He was descended from noble native stock and showed it in his entire demeanor. He was forty years of age, one of those men that time cannot rob of a certain youthful exuberance. One who would never grow old because he was always doing things, and accomplishing them. His hair was jet black. His features were finely chiseled. His eyes were piercing and clear. Every inch the commander, he now faced his associates.

"Gentlemen," he remarked without ceremony, "Harasaki will summarize the situation by giving us a report on the comparative strength of the opposing forces."

The diminutive yellowman rose. Only the slightest accent marked his cultured English. Straight to the point he went, as, indeed, men are ever prone to do under serious stress.

"The first encounters, of course, will be in the air. Their destroyer-fleet numbers six hundred vessels of air, ours three hundred, slightly less efficient than theirs. They have fifteen hundred operators to the destroyer. We have twelve hundred. They have a combined boarding force of six hundred thousand, we one of five hundred thousand. Their ground armies and ours number each about seventy-five millions of men," Harasaki seated himself.

Helman glanced at his assistants. They, in turn, looked at him. Again he spoke: "Gentlemen, from the practical point of view of military men now living on the brink of the Twenty-first Century the plan that has been becoming an obsession with me is no doubt wild beyond the imagination of a madman. And yet I thoroughly believe that in it alone rests any possibility of repelling the Eurasian forces. It is not necessary for me to outline the natural course of events as they may be forecast at this time. If our navy is overpowered, our country is at the mercy of the Eurasian air force. If, on the other hand, by some means that would not seem to be available, our navy is able to seriously mutilate theirs, in being annihilated we will be able to hold our own against the forces that will battle on land. If the odds of the air are overcome, we cannot lose, for we are fighting in defense of the right. However, should this plan that I have hit upon, be put into operation, and prove effective, it would occasion the shedding of no blood save our own. I realize, as will you, how desperate it is, but it appears to me that it is better to be desperate than without hope. Again I say, gentlemen, that it is a wild scheme, but it may win. In us has been vested this day supreme power during the time of war. Will you give me authority to negotiate this plan at once? Here? In your presence?

IT was the brave old Dane, Jon Larson, the stalwart, rugged father to them all in spirit, who answered finally for himself and his three brother officers.

"The people of the Americas believe in you, Commander Helman. Can your subordinates do otherwise?"

Helman cleared his throat. "I thank you, gentlemen. I can only remark that your implicit trust deserves something better than failure."

He ran his fingers over certain formations on the summoning and control board in front of him. A door opened and a small man, also garbed entirely in white, entered the room. To look at this small, bald headed little man one would never have guessed that it was Royal Hilton, greatest authority in the field of radiovision, that had ever lived and inventor of the major

vision principle in use throughout the world at that time.

"Mr. Hilton," questioned Helman, "you have under your control here in Manhattan the mirror channels for all the Americas?"

"The controls are in Jersey, sir. They may be operated by Telepower M from my laboratories here or can be operated there under orders given here. We have an emergency system on the Second Belowcrust Level, but it would require five hours to prepare it for operation."

"Operate the Jersey by Telepower M. I should like this room to be televised on the imperative waves at once. How long before it can be accomplished?"

"It will require about fifteen minutes, sir."

"Very well. Then I want you to find out the whereabouts of Eurasian Director Lonklos and his staff. They are probably in Calcutta. Can you force the imperative mirror and audio waves into Eurasian channels?"

"It can be accomplished for most of the countries of Europe, sir. It will be harder for Asia."

It was about a quarter of an hour later that the summoning attachment on every receiver in the western hemisphere rang out. And the people, knowing how much anything on the imperative waves must affect them all at this time, rushed to their reception screens just as Hilton's face began to form upon them.

"By order of the Commander Helman," he announced, speaking in the International tongue A2 which was taught in all schools throughout the world.

Then the face faded and the Manhattan councilroom was projected upon the screens. As the Commander began to speak, his face was made paramount, that is, thrown into close-up and four hundred million souls were looking at their leader.

"You have got us on as many of the Eurasian screens as possible, Hilton?" they heard him ask. "And the Eurasian Director will telereseve with us from Calcutta? Very good."

And the scene faded again to another. This time it was another room. A quintet of five officers were sitting there also. There was no doubting who these were, nor who the man was who was now paramount—the man with the dark olive skin and fine features. He was speaking now in his silvery A2 speech.

"This is Lonklos speaking. You wish to say something to me and our Council for War, Commander?"

Again the scene changed. Again the honest, handsome face of Helman appeared. It was in direct contrast to the disappearing face of the suave Greek-Indian. Lonklos' mother had been a Bombay princess.

"Don't you know me other than as the American Commander, Director Lonklos?"

"Pardon me, my dear sir, but in these troublous and obdurate times I see so many who are co-operating with me, that I have had no opportunity to observe any of those we intend to conquer, not even their Commander."

"Then I must refresh your memory, Director. Twenty years ago we were both graduated from the International University of the Air at Windsor."

The face of the Greek showed something of surprise and recognition. "So the American Commander Helman is the same Roger Helman who was my bitterest opponent in the University aviation days? Well, I had forgotten, but as I see you now, I do discern a resemblance to the man I knew. Well, Commander, have you at last decided to capitulate? If you fully understand the situation of the airyal navies I am not surprised if you have."

Commander Helman continued.

"You anticipate even as of old, Director. Even as you anticipated a victory in the Airyal Tournament held at Windsor in 'seventy-nine'. That anticipation availed you nothing. Neither will this.

"To begin with, do you not realize that this war will be a horrible thing, Director? If you do not, I can assure you that it will, for you must realize the despotism which you are planning by the utter annihilation of our people. A great deal of bloodshed might be avoided, if you would appreciate certain facts. If your navy is destroyed you must know that further strife will be of no use. Our land forces are of the same strength as yours. This is the proposal we are called to extend to you tonight: Your highest staff consists of four assistant members and yourself. So does ours. You are all airmen and have been trained in the best of aviation schools. So have I and my four aide-officers. Realizing this, we, the American Council for Defence, challenge your staff to meet us in airyal combat over the Pacific two thousand miles due west of the Port of San Francisco at 10:00 A. M. on the morning of the twenty-first. In the presence of both our navies, we five will be pitted against you five in Construction C6 Kombatter planes. It will be a fight to the end. If you are victorious, our navy and country will surrender to the Eurasian government without further hostility. If, on the other hand, we are victorious, such of our officers as remain—you understand, of course, that in that case none of your staff will be alive—must be allowed to return to our fleet unmolested. On reaching the fleet, we ask no quarter of you. We are merely confident, if only one of our chief officers returns, that without your officers our navy will be victorious over your larger fleet in airyal battle. Events developing thus, should you at that time desire to refrain from battle, we would allow your navy to return to its Calcutta base without a shot being fired, simply demanding that the Eurasian government discard its oppressive centralization policy, that your peoples return to the ideals that may make for less efficiency but will surely make for better men and women, that this monstrous reaction of yours to despotism be now and forever dispelled."

It was truly a desperate stratagem, but the rest of the Defence Council realized even now, that in its very desperation lay the only chance of success for their two nations.

The Commander Helman, let it be remarked, was not solely a student of the military science. In this he proved himself, as all great warriors must prove, a student of men. From his Air University days he had remembered Lonklos. A gallant, daring fellow he had been. A representative scion of his parent, then already famous, who, through sheer bravery, had arisen to be the greatest of Earth conquerors—ever willing to take a dare—if daring enough it was—ever willing to demonstrate a prowess that was not defeatable—a prowess that was subtle oftentimes, but always fair and honest. He remembered a four thousand foot voluntary vertical catapult the man had taken, only to come out of it when his altimeter had registered a bare four feet, on a dare! And when he had lost the tournament, which he had been so confident of winning in "seventy-nine", there had been no malicious regret of any kind on his part. If a desperate dare would take with anyone in these desperate times, it was with the Eurasian Director Lonklos.

And it proved efficacious! Lonklos paused a moment, spoke with his aides, and then his reply came through the ether in that suave, subtly ringing voice of his. Through the atmosphere it was shot into every home in the world. It was heard directly by perhaps three-fourths of the world's adult population, this reply that was to go down in history as, indeed, this whole night

and the day that followed was to go down in the pages of world record: "We, the officers of the Eurasian War Council, appreciate your challenge. We accept it for several reasons. We of the Council are confident that we can win from you in face-to-face airyal combat as easily as we would win a game. Moreover, if we refused the Eurasian peoples, armies, and the industrial units, upon which the greatness of our nation rests, might think we were afraid and therefore not worthy to be in command of the greatest conquering host in historic times. At ten of the Pacific Ocean morning we will be at the place suggested and ready. Is the word of Lonklos, as you remember its giver, sufficient promise that there will be no treachery from our side?"

"It is sufficient, Director, and mine——?"

"Is sufficient as well. As we used to say in the University days 'may your tail-skids never fail.' Until the time set, Commander."

The screens darkened. Helman rose. "We embark for San Francisco at midnight, gentlemen."

SO it was that the two airyal fleets sighted one another at 9:45 on the morning of the twenty-first of August, 2000. And by 10:00, through the operation of the television relay units maintained by each fleet, the rest of the world was watching the maneuvers with prayers in the hearts of the millions.

Leading the air navies the flag-ship of each fleet air-anchored now. The distance between them was about five miles. The dispatch apparatus of the Eurasian fleet shortly invoked the imperative mirror wave and Lonklos' face appeared.

"Are you ready, Commander?"

"I am, Director. It is understood we are going to fight in rocket Kombatter planes of C6 Construction. We are coming out now."

Two minutes later five dispatch-tunnels in the American Flagvessel, *Thomas Jefferson,* opened and five C6 Construction fliers shot forth to be met by an approaching quintet of C6's from the Eurasian fleet.

The C6 Kombatter plane or, to use its more technical name, Kombatter rocket, was in every way appropriate for a contest such as this. It used the most accessible of all fuels in its frictionless, silent engines: Radiopower D. It had a motor efficiency of almost eighty-one per cent. Its exterior was constructed of Airmetal Q; it was, as its name would imply, built on the rocket principle, seven feet in length and tapering from three feet high at the center where the operator's seat and controls were located to two inches at either tip.

The parties approached warily. Each sought as opponent the officer whose rank corresponded to his own. Helman soon caught Lonklos in his "finder" and together they whirled higher.

So they all assumed positions. Five hundred feet above the ocean waves Ralo, the Argentine, met El Tala, the Arabian. Two thousand feet higher the aged and sturdy Larson met Najuski, the young Pole and, a mile to the south, Harasaki met Motu Mortari, a brother yellowman, personal aide-de-camp to the Director. It was a splendid battle. They were wizards, these ten, matched paladins of the sky. Seemingly impossible ray evasion after ray evasion was successfully negotiated. Synchronization of position after synchronization was frustrated on both sides. For three hours the battle sped on.

Minton was the first to fall. Caught in a transverse elevation roll to get above Gordon, the Briton against whom he was matched, one of the disintegration rays from Gordon's plane was able to describe an identical area on his opponent's rocket for five seconds and Minton went down, cremated in a mass of molten metal. But even as he fell, in that living inferno where he agonized, he contrived his own disintegration ray so that it fell upon the now slightly unwary Gordon and shortly after his own funeral pyre had cleft the mercifully extinguishing waves, the Briton's car followed.

Now it was one of the afternoon. Harasaki had paid the supreme toll of battle, but directly after Larson had caught Mortari on an effective ramedian that had finished the latter. At 2:05 Ralo had gone down and Helman and Larson were pitted against three. The Local Communicator Channel had not been used yet by the Americans, so heated had been the battle. But now, in a brief respite, Larson addressed his chief.

"I can distinguish an area on the Arabian's flier that has been impaired by a rabrush. I think I can finish what it began in a moment. Then I will engage the other. Do not trouble yourself with any but Lonklos, sir."

At 3:00 the rabrush on El Tala's fore-surface had proved his undoing at the Dane's hands. At 4:02 however, Larson, flying close in upon his remaining opponent, had not made enough allowance for "clear passage" on a rise calculation and he and the Pole had crashed together into the waters below. Exactly one minute later Lonklos' onslaught had shattered the engines of Helman's rocket. It seemed all over, but Helman, managing to jump immediately from his falling car, by parachute-maneuver had got himself over the Eurasian's flier. Landing on its deck, he had got the trap leading into the rocket open. He had struggled through the opening greatly hampered by the terrific airstream.

And so at last they were matched. Face to face. Hand to hand. The fate of the world lay in two strong bodies, in two pairs of powerful arms. And on that rocket, uncontrolled now and speeding ever downward, they exchanged blow for blow. Helman came in with a crashing, finishing left. Lonklos dodged and they went into a clinch.

They were struggling on the edge of the embarking deck now, leaning against a wall of wind. The tiny craft lurched to the side and together they hurtled seaward. Far into the depths of the water they sank, neither relaxing his deadly hold a single iota. Upon rising to the surface Lonklos managed to wrap his legs about Helman's body and the latter caught the former's head in a vice-like grip. It was a question of time now—of time and superior strength. Either the vital air was to be squeezed from the body of one or the head of the other was to be crushed, or both were to die.

But it was left to the remaining rocket to execute the demands of Destiny. Flying ever closer to the bosom of the waters, its rays of destruction still operating, it swept a path across the sea that caught Lonklos directly across the crown and passed on, never touching Helman. There was a swishing sizzle, an odor as of burning flesh and Lonklos, Eurasian fighter magnificent, greater son of a great conqueror died.

A hydrolanding flier put out from the *Thomas Jefferson* and by the time Helman was once again on the deck of his flagship, the Eurasian fleet was on the Calcutta course.

The Executive Director Lonklos of Eurasia had kept his word in every detail, and now, rather than risk battle with their Director and his assistant officers dead and with the enemy commanded by the greatest airyal strategist left in the world, they of Eurasia returned to Calcutta to fulfil the promise of the dare. The Americans were saved.

THE END

The War of the Universe

By Clinton Constantinescu

(*Continued from page* 563)

loaded with treasures. The Merlyrs, as we abbreviated the name of our fellow visitors, likewise stocked their machines with rarities. Most important of all, we collected samples of the marvelous crystalline minerals and rarer elements unknown on our own system.

The Gurnors, or bird men, had settled down on the planets again and renewed their former civilization, which had once attained a high standard before they had been driven into exile by the Ikrikans. A number of the feathered men desired to return with us to our system, so we readily agreed to take about fifty. We also took twenty-five insect men and promised the Kerkruls that just as soon as possible we would establish regular communication and commerce between the two solar systems.

The Merlyrs were very glad to accept our invitation to accompany us on our return home, for during all their extensive spacial tour throughout almost all the systems of our galactic universe they had never met human beings so similar to them as we were. Nor had any one system rivaled them in intelligence and civilization as did we.

On the day of our departure Lurla came to me with a question.

"You'll let me come with you—in your machine, instead of father's, won't you, Charles?" And she looked up at me pleadingly.

"You can certainly bet you're coming with me, honey!" I answered unhesitatingly.

"I'm so happy," she murmured.

* * *

At last our two fleets were ready to depart. The plains for miles were black with crowds of insects waving farewell as our pilot projectile rose slowly into the air. We gave a brilliant three-flare farewell salute, and as we gradually increased speed the other machines followed us in quick succession. Both of our giant fleets lined in orderly rows and sped away into the black velvet space, soon leaving binary Eta and its system far behind.

Jovrite was at his control board, leading our fleet along, while not far behind was the great Merlyrinnian fleet, led by its able leader, Rajance. We were anxious to make the return flight as swift as possible, and by using extra power-coils on the alkali generators we brought our speed up to the high velocity of L-200. In this way we were hardly more than eighteen days on our return journey. Our long range electromagnetic waves and rays were employed to clear our path from chance meteorites, comets and so forth.

* * *

It was the beginning of June, 1993, that our huge fleets entered our solar system and landed gently on the vast Calaphrite plains of Jupiter. Our arrival brought the people from every planet to Jupiter to greet us and our visiting friends. Everyone was quite surprised though glad to see the Merlyrinnians so similar to us in every respect. Great ceremonies were organized in honor of both our fleets, and the newcomers were extended the heartiest welcome and friendship. Scientists, newspaper reporters and what not surrounded us on every side, and the greatest of us were literally carried all over the place. Rajance and Jovrite were national, interplanetary—nay, interstellar heroes!

Even my sweetheart, Lurla, was worshiped. And of course we were both madly in love with each other, so Rajance consented for us to get married. During this great festal season two gay marriages lent color. In the great garden of Marlephram and amidst the foremost scientists of our planets Lurla and I and Nyola and Dr. Martin were united in matrimony. The double ceremony was performed by Randal Jovrite, being captain of our fleet and also the greatest man of our system. I then returned to earth with my charming bride and we were honored with more festivities.

* * *

For months after our arrival the front pages of every interplanetary newspaper dealt with the accounts of our journey to Eta Cassiopeiae, of the great Cassiopeian or Universal War, of our visit on the planets of Eta after peace had been restored, and of our return home with the Merlyrinnian visitors. For months every paper and magazine has been filled with pictures of the War of the Universe in action. Randal Jovrite's photo adorned the front pages for weeks after. The photos of other seven planetary leaders have also been in print frequently, and both Lurla and I were the center of news for the editors of our earth. Foremost among these newspapers of the earth which I must thank are *Interplanetary News, Inc.*, of New York; Chicago *Herald and Examiner, Planetary Daily* of London, and the *Ether Cry, Inc.*, of Toronto.

The Merlyrs were extended every hospitality and friendship and as a result have become real brothers to us. They think we have eight wonderful worlds here. (The ninth is uninhabited.) Life has been like a dream with Lurla. The Merlyrinnian fleet expects to return to its own system in four months' time, just after New Year, 1994. The solar scientists have accepted the invitation from Rajance to accompany him back on a visit to his worlds. Lurla and I are going. A large part of our fleet, led by Randal Jovrite, will follow the other great fleet through interstellar space again. We have established regular communication and commerce between our system and Eta Cassiopeiae, employing several thousand projectiles, and the time is not far off when this interstellar commerce will extend to other systems.

Apart from that, I am very anxious to know what Rigel Orionis has in store for us.

THE END

Your Viewpoint

The Problem of Time Travel. Where Will the Ph.D.'s Find Employment.

Editor, AMAZING STORIES QUARTERLY:

As frequently happens, I find myself burdened with an accumulation of weighty and momentous scientific problems and ideas which I will elaborate upon to AMAZING STORIES as a sort of safety-valve. As you know, according to the new theory of medicine, if a doctor merely permits his patient to explain in detail all his various pains and ailments to an appreciative ear, he (the patient) will, by the telling thereof, relieve his emotions and straightway become well, the doctor receiving all the credit. Therefore, even if this letter is of no value, please do not consider it a total loss as AMAZING STORIES in this case occupies a rôle similar to the appreciative ear and is invaluable in cases of this kind.

In the numerous time-traveling stories, I think that the most common and obvious fallacy, which has hitherto been unmentioned, is the fact that the temporal explorers do not have any definite *event* to which they must return. In an *event*, as explained by Einstein, something does not have to happen, but it is an infinitely small division of which time is composed, as a line is constructed by a succession of dots and a plane by a succession of lines. Consequently, I believe that we are living in one of these *events* and the one a minute or a second in the future or the past is as entirely separate and distinct as the lines which compose a plane. Therefore, if a time-traveler ventured into the future and then returned even one-millionth of a second behind his own *event;* he would be quite lost, as in another dimension. Of course, the continual stream of time would, meanwhile, be moving onward; which would make the task still more complicated. I do not know if I have made my idea clear, but surely you can see how ridiculous it is to presume that the time-traveler could set his meter to 1931 and, by some miraculous process arrive, dramatically, right in the middle of his own time.

With respect to interplanetary stories, I have often wondered what would be the effect of absolute zero on the outside hull of a space-ship. In open space the side turned toward the sun would receive enough radiant energy to cause some heat, but if the ship rose on the dark side of the earth, as often happens in stories, would not the temperature of the hull became absolute zero when removed from the friction of the atmosphere? I am not a chemist, but I believe that at absolute zero there is no movement of the molecules and, such being the case, there would be no centrifugal force to counteract their mutual attraction, so they would immediately be drawn together, thus greatly increasing the ship in density and decreasing it in size. Apparently, there must be something wrong with my reasoning but I cannot discern the fallacy.

Now, we come to the immediate inspiration of this letter. In the Spring, 1929, AMAZING STORIES QUARTERLY there appeared a story by Dr. Keller called "White Collars." The story pictured an excess out-put of college graduates who were finely trained on technical points but were starving for lack of employment due to the competition of numbers. The following editorial, which appeared recently in the St. Louis *Post-Dispatch*, is another vindication of AMAZING STORIES:

BUDAPEST'S ERUDITE WHITE WINGS.

There are 27 street cleaners in the city of Budapest with Ph.D. degrees. This fact symbolizes a condition of over-education that exists not only in Hungary but in nearly every country in Europe and in the United States as well. It happens that the problem of the educated unemployed is so acute in Budapest that an organization has been formed to seek some solution, thus serving to emphasize that it is not only the untrained, unskilled worker who has felt the effect of the world-wide depression. Because of our antiquated and grossly unbalanced system of distribution, there is a surplus of teachers, lawyers, doctors and nurses.

Some of the blame certainly must fall upon an educational system that has very little relation to the modern world, that for the most part clings to outworn patterns and formulae which are imprinted with grim determination upon the minds of the young. Street cleaners, good street cleaners, are very essential members of society. But it is doubtful if the Ph.D. studies would contribute much to the skill required for this work. In fact, it is almost a certainty that each of the 27 doctors of philosophy is an inefficient and unhappy street cleaner. In a state without social plan or direction, there is no guarantee that the education machine will not continue to turn out, through dint of long and laborious effort, doctors of philosophy who will have to become street sweepers.

I have noticed a marked improvement in the quality of stories in the last few monthly issues. The best story in the February issue was "The Man Who Annexed the Moon," and in the February-March "Television Hill." I might mention that the best stories on time-traveling I have ever read were the "Paradox" stories by Charles Cloukey.

Wayne D. Bray,
Campbell, Mo.

(Of course time travel is, so far as we know now an utter impossibility, although it is an excellent basis for stories and certainly some of our writers have made excellent use of it. It also opens up the possibility of discussing various scientific subjects and our authors, you will find, have availed themselves of this also. It seems hardly worth while to study the logic of an impossibility, but we find your remarks quite interesting. But is not the logic of the situation, that if a man can travel into the future and then back into the past, he can put himself into any part of his previous life that he wishes? In what you say about the absolute zero, do you not fail to distinguish between the atom and the molecule. Centrifugal force is supposed to keep the electrons in the atom away from the proton center or nucleus. But centrifugal force does not apply to the molecule and no sudden change of volume is anticipated at absolute zero.

Dr. Keller is a very distinguished authority in the medical world and he now holds a high position in one of the institutes of Pennsylvania. He certainly attacked the employment problem vigorously in the story you refer to.—EDITOR.)

Some Well Thought Out Criticisms and Appreciations From the Northwest.

Editor, AMAZING STORIES QUARTERLY:

May I offer some diversified observations upon the contents of the Winter edition of the Quarterly?

It was almost a complete failure, for the simple reason that it didn't have a story in it by Aladra Septama. How come? Have you lost him?

The cover, by Morey, was poor. Why did you have to have one of the inside pictures almost exactly like the cover picture? Morey's inside pictures were fair, but nothing to brag about. Wesso's pictures were fair.

The editorial "Science—Scientifiction—Science," by Mr. Eason, was good.

"The Birth of a New Republic," by Miles J. Breuer, M.D., and Jack Williamson, was very good. It has a remarkable resemblance to the Revolutionary War.

For instance: the colonies on the moon correspond to the English colonies in North America; the voyage to the moon corresponds to the voyage across the Atlantic, while the metals company represents England. The Tellurians were the masters of space, just as England was the master of the seas. The Moon-calves represent the American Indian and received much the same treatment. The Battle of Meteor Hill represents the Battle of Bunker Hill. Even the names of the chief characters have a resemblance. Warrington represents Washington; Lafallette represents the Frenchman who helped us in the time of our greatest need, Benedict is still a traitor, while Franco represents the French Government, and Paul Doone is John Paul Jones' descendant.

"Elaine's Tomb," by G. Peyton Wertenbaker, was very good. "When the Moon Ran Wild," by A. Hyatt Verrill was very good. "Service First," by David H. Keller, M.D., was good.

I have recently finished reading the book, "The Strange Stories of H. G. Wells," and although there are some good stories in it, they cannot compare with modern Scientifiction.

"Sea Raiders," "The Time Machine," "The Empire of the Ants," and "The Lord of the Dynamos," were among the best, while such stories as "The Stolen Bacillus," "In the Country of the Blind," "The Plattner Story," "The Valley of the Spiders," "The Diamond Maker," "The Star," "The Man Who Could Work Miracles" and "The Argonauts of the Air," were not so good.

L. E. Connerley,
Box No. 141,
Jacksonville, Oregon.

(We are sure that Aladra Septama will be greatly pleased by the compliment you pay him and we are glad to have you compliment him. We can assure you that Morey and Wesso are extremely good artists and are the pick of a large number whom we have had to illustrate our issues. Mr. Eason may be termed one of the charter members of the Science Correspondence Club, which had its inspiration, we venture to say, largely in our issues. Dr. Breuer and Mr. Williamson do a great deal of writing for our columns and are among the very best of our authors. We are interested in what you say about H. G. Wells. He has written a great quantity of fiction and has acquired a high reputation, but his stories always seem to the writer to drag a little. We think we feel about them much as you do. We thank you for your thoughtful criticism and it is such letters as yours that help us in our work and are a guide for the future conduct of what we like to call "Our" Magazine.—EDITOR.)

The Interplanetary Quarterly Discussed. The Writer of This Communication Finds It Too Short.

Editor, AMAZING STORIES QUARTERLY:

Your Quarterly is wonderful this time, only it's too darn small. After I got done, I had just gotten a good taste. I was hungry for more. All four stories are wonderful. Best are: "Extra Galactic Invaders," and "Islands of Space." One is as good as the other. Don't forget those "Skylark" books. I'm looking ahead to the next story with impatience. Interplanetary is best. Thanks.

Ott B. Dellermann,
E. 2314 Sixth Avenue,
Spokane, Washington.

(There are 144 pages in the Quarterly; all are of large size and rather small type so we do not think you are justified in saying that the Quarterly is small. We always felt that it was rather large. We are very glad indeed to know that our work meets your approval.—EDITOR.)

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